SECTION 2C. BRIQUETTING (AND OTHER AGGLOMERATION PROCESSES)

TECHNICAL INFORMATION HELP LINE: (800) 357-7075

IS BRIQUETTING OR ANY OTHER AGGLOMERATION PROCESS PERFORMED AT THIS SITE?

G YES (CONTINUE)

G NO (SKIP TO SECTION 2D)

THROUGHOUT THIS SECTION, YOU WILL BE REQUIRED TO PROVIDE INFORMATION FOR **ALL** OPERABLE UNITS AND WATER SYSTEMS RELATED TO BRIQUETTING AND OTHER AGGLOMERATION PROCESSES WHICH WERE ON SITE DURING 1997, INCLUDING UNITS AND WATER SYSTEMS WHICH MAY HAVE BEEN IDLE FOR AN EXTENDED PERIOD OF TIME DUE TO CIRCUMSTANCES SUCH AS MARKET CONDITIONS, MAJOR REBUILDS, OR LABOR DISPUTES. IF AN OPERABLE UNIT OR WATER SYSTEM WAS NOT IN OPERATION DURING 1997, SUBSTITUTE THE MOST RECENT CALENDAR YEAR WHEN SUCH CIRCUMSTANCES DID NOT EXIST. NOTE THE YEAR OF OPERATION AND THE CIRCUMSTANCES IN THE COMMENTS AT THE END OF THIS SECTION, AND PROVIDE DATA FROM THAT CALENDAR YEAR.

HOW MANY **OPERABLE BRIQUETTING OPERATIONS (AND OTHER AGGLOMERATION PROCESSES, NOT INCLUDING SINTERING)** WERE ON SITE DURING **1997**? _____

COMPLETE A COPY OF SECTION 2C FOR **EACH** OPERABLE AGGLOMERATION PROCESS. NUMBER EACH COPY OF SECTION 2C IN THE SPACE PROVIDED AT THE TOP OF EACH PAGE.

G CBI **2C-1.** Provide the designation by which your site refers to this agglomeration process (e.g., Briquetting Plant C).

_____

G CBI **2C-2.** Which type of agglomeration process (other than sintering, Section 2B) is this operation?

G Briquetting
G Pelletizing
G Nodulizing
G Other *(specify)*: _____

G CBI **2C-3.** What was the first year of operation for this agglomeration process? _____

G CBI **2C-4.**a. What is the total rated capacity of this agglomeration process in tons per year of agglomerated product?

_____ tons/year (to three significant figures, e.g., 425,000 tons/year)

G CBI b. What is the annual number of operating hours used to determine the total rated capacity?

_____ hours/year

G CBI **2C-5.**a. Is heating part of the agglomeration process?

G Yes (continue)
G No (SKIP to Question 2C-6)

G CBI b. Indicate the method(s) your site uses to heat the agglomeration materials. Check (✓) **ALL** that apply.

G Rotary kiln
G Vertical shaft furnace
G Traveling grate
G Grate kiln
G Other *(specify)*: _____
G Other *(specify)*: _____

G CBI **2C-6.** What is the typical percent (%) moisture by weight of the agglomeration mixture as applied to the agglomeration line?

_____ typical % by weight

G CBI **2C-7.**a. How much water, on average, is added to the agglomeration mixture to attain the desired moisture content? If no water is added, check the box to the right and SKIP to Question 2C-8. **G**

_____ gpm _____ hours per day _____ days per year

G CBI b. Indicate **ALL** sources of water used to condition the agglomeration mixture. Provide the estimated percentage of water contributed by each source. The percentages should add to 100 percent.

G Plant service water (city, well, or surface water which has not been used elsewhere on site) _____ %

G Noncontact cooling water *(specify manufacturing process(es))*: _____ % _____

G Treated process wastewater *(specify manufacturing process(es))*: _____ % _____

G Untreated process wastewater *(specify manufacturing process(es))*: _____ % _____

G Treated storm water *(specify manufacturing process(es) or other collection area(s))*: _____ % _____

G Untreated storm water *(specify manufacturing process(es) or other collection area(s))*: _____ % _____

G Other *(specify)*: _____ _____ %

Total: 100 %

G CBI **2C-8.**a. Indicate whether natural or synthetic binding materials are used in the agglomeration process.

G Natural binding material (continue)

G Synthetic binding material (continue)

G No (SKIP to Question 2C-9)

G CBI b. Provide a list of the principal ingredients (1% or more by weight) and include a copy of the material safety data sheet (MSDS) for each binding material. Make sure this question number and your site ID (shown on the cover page of Part A) are on each MSDS in the upper right corner.

G CBI **2C-9.** Check (✓) **ALL** raw materials which were charged to this agglomeration process during **1997**.

- **G** Flue dusts from ironmaking
- **G** Flue dusts from steelmaking
- **G** Iron ores
- **G** Iron ore fines
- **G** Coal
- **G** Coke
- **G** Coke breeze
- **G** Mill scale
- **G** Limestone
- **G** Any iron-bearing material from off-site sources *(specify)*: _____
- **G** Sludges from the blast furnace wastewater treatment system
- **G** Sludges from the basic oxygen furnace wastewater treatment system
- **G** Other wastewater treatment sludges *(specify treatment system)*: _____
- **G** Other *(specify)*: _____
- **G** Other *(specify)*: _____

G CBI **2C-10.** Provide annual production data for the agglomeration process for each of the five calendar years 1993 through 1997.

Year	Agglomerate Produced (tons/year)
1993	
1994	
1995	
1996	
1997	

HOW MANY **OPERABLE WET AIR POLLUTION CONTROL (WAPC) SYSTEMS** WERE ON SITE AT THIS AGGLOMERATION PLANT DURING **1997**? A WAPC SYSTEM MAY INCLUDE MULTIPLE DEVICES SERVING THE SAME PROCESSING UNIT. _____

COMPLETE A COPY OF QUESTION 2C-11 FOR **EACH** OPERABLE WAPC SYSTEM. NUMBER EACH COPY OF QUESTION 2C-11 IN THE SPACE PROVIDED IN THE UPPER RIGHT CORNER. NOTE: QUESTION 2C-11 IS THREE PAGES LONG.

IF YOUR SITE DOES NOT HAVE WET AIR POLLUTION CONTROL ASSOCIATED WITH THIS AGGLOMERATION PROCESS, **CHECK THE BOX TO THE RIGHT AND SKIP TO QUESTION 2C-12.** **G**

G CBI **2C-11.**a. Provide the designation(s) of all operations associated with this WAPC system. If information for this WAPC system is already provided elsewhere in this survey, answer Question 2C-11.a., check the box to the right, and SKIP to Question 2C-12. **G**

_____

G CBI b. This WAPC system controls emissions from which of the following processes? Check (✓) **ALL** that apply.

- **G** Raw material handling, preparation, and storage
- **G** Entry end of the agglomeration process
- **G** Agglomerate cooling
- **G** Building evacuation
- **G** Other *(specify)*: _____

G CBI c. Indicate the devices in this WAPC system. Check (✓) **ALL** that apply.

- **G** Venturi scrubber
- **G** Spray chamber
- **G** Evaporation chamber
- **G** Separator
- **G** Demister
- **G** Packed tower
- **G** Other *(specify)*: _____
- **G** Other *(specify)*: _____

G CBI d. Provide the gas or air flow through the system in dry standard cubic feet per minute (dscfm).

_____ dscfm

G CBI e. Is the water recirculated or applied once-through?

- **G** Recirculated (continue)
- **G** Once-through (SKIP to Question 2C-11.l.)

G CBI f. Is any treatment and/or conditioning (e.g., chemical additions) performed in the recirculating loop?

- **G** Yes (continue)
- **G** No (SKIP to Question 2C-11.j.)

G CBI g. Does the treatment in the recirculating loop also treat wastewater from other processes?

- **G** No - Dedicated treatment
- **G** Yes - Treatment shared with other processes

Specify the processes: _____

COMPLETE A COPY OF QUESTION 2C-11 FOR EACH OPERABLE WAPC SYSTEM.

G CBI **2C-11.**h. **(cont.)** Check (✓) **ALL** treatment units and/or treatment processes which are included in the recirculating loop.

- **G** Clarifiers
- **G** Classifiers
- **G** Cooling towers
- **G** Earthen Lagoons
  - **G** Lined *(specify liner type)*:
    - **G** Clay
    - **G** Synthetic
    - **G** Other *(specify)*: _____
  - **G** Unlined
- **G** Oil skimmers
- **G** Scale pits
- **G** Sludge dewatering units (e.g., vacuum filter, pressure filtration, etc.)
- **G** Water filters (e.g., sand, multimedia, etc.)
- **G** Water softeners
- **G** Other *(specify)*: _____
- **G** Other *(specify)*: _____
- **G** None

G CBI i. Indicate chemical additions to the water recirculation system. Check (✓) **ALL** that apply.

- **G** Acid
- **G** Caustic (sodium hydroxide)
- **G** Corrosion inhibitor
- **G** Lime
- **G** Polymer
- **G** Scale inhibitor
- **G** Surfactant
- **G** Other *(specify)*: _____
- **G** Other *(specify)*: _____
- **G** None

G CBI j. Provide the design flow of water through the recirculating loop. _____ gpm

G CBI k. Provide the average recirculation rate of water through the WAPC system and period of operation.

_____ gpm _____ hours per day _____ days per year

G CBI l. Provide the average rate at which new water is added to the system (for once-through systems, provide the influent flow rate; for recirculating systems, provide the makeup flow rate).

_____ gallons per day _____ days per year

COMPLETE A COPY OF QUESTION 2C-11 FOR EACH OPERABLE WAPC SYSTEM.

G CBI **2C-11.**m. **(cont.)** Indicate **ALL** sources for water addition. Provide the percentage of water contributed by each source. The percentages should add to 100 percent.

- **G** Plant service water (city, well, or surface water which has not been used elsewhere on site) _____ %
- **G** Noncontact cooling water *(specify manufacturing process(es))*: _____ _____ %
- **G** Treated process wastewater *(specify manufacturing process(es))*: _____ _____ %
- **G** Untreated process wastewater *(specify manufacturing process(es))*: _____ _____ %
- **G** Treated storm water *(specify manufacturing process(es) or other collection area(s))*: _____ _____ %
- **G** Untreated storm water *(specify manufacturing process(es) or other collection area(s))*: _____ _____ %
- **G** Other *(specify)*: _____ _____ %

Total: 100 %

G CBI n. Provide the average discharge rate from the system and period of discharge (for recirculating systems, provide the blowdown rate).

_____ gpm _____ hours per day _____ days per year

OR: _____ gallons per day _____ days per year

G CBI o. Indicate the destination of wastewater discharge or blowdown. Check (✓) **ALL** that apply.

- **G** Discharge to treatment *(specify treatment system)*: _____
- **G** Discharge without treatment by pipeline, sewer, or other conveyance to surface water *(specify outfall number)*: _____
- **G** Discharge without treatment by pipeline, sewer, or other conveyance to POTW *(specify designation for permit monitoring location)*: _____
- **G** Discharge without treatment by pipeline, sewer, or other conveyance to PrOTW *(specify designation for permit monitoring location if applicable)*: _____
- **G** Zero discharge or alternative disposal methods:
  - **G** Deep-well injection
  - **G** Evaporation *(specify method)*: _____
  - **G** Percolation ponds
  - **G** Spray irrigation
  - **G** Contract hauled
    (specify disposal rate, including transportation): $ _____ per gallon
    (specify destination/disposal method): _____
  - **G** Incineration
  - **G** Other *(specify)*: _____

G CBI **2C-12.**a. Are any dry air pollution control (DAPC) systems associated with this agglomeration process?

G Yes (continue)

G No (SKIP to Question 2C-13)

G CBI b. Indicate the process associated with DAPC systems on the agglomeration process. Check (✓) **ALL** that apply. For each process checked, indicate the type of DAPC system.

Process	Type of DAPC System
G Raw material handling, preparation, and storage associated with the agglomeration process	**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:
G Entry end of the agglomeration process	**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:
G Agglomerate cooling	**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:
G Building evacuation associated with the agglomeration process	**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:
G Other *(specify)*:	**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:
G Other *(specify)*:	**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:
G Other *(specify)*:	**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:

STOP

EXCLUDING WAPC SYSTEMS AND STORM WATER, HOW MANY OTHER WASTEWATER SOURCES FROM AGGLOMERATION OPERATIONS ARE PRESENT? _____

COMPLETE A COPY OF QUESTION 2C-13 FOR **EACH** AGGLOMERATION PROCESS WASTEWATER SOURCE. NUMBER EACH COPY OF QUESTION 2C-13 IN THE SPACE PROVIDED IN THE UPPER RIGHT CORNER. NOTE: QUESTION 2C-13 IS TWO PAGES LONG.

IF YOUR SITE HAS NO AGGLOMERATION PROCESS SOURCES WHICH CONTRIBUTE PROCESS WASTEWATER NOT ASSOCIATED WITH A WAPC SYSTEM OR STORM WATER, **CHECK THE BOX TO THE RIGHT AND SKIP TO QUESTION 2C-14.** **G**

2C-13. Provide information for the agglomeration process and related on-site wastewater generating sources.

G CBI a. Indicate the source of process wastewater **NOT** associated with wet air pollution control or storm water. If there is more than one source at this site, complete a copy of this question for **EACH** agglomeration process source.

- **G** Raw material handling, preparation, and storage
- **G** Agglomerate cooling
- **G** Equipment cleaning and washdown water
- **G** Other *(specify)*: _____

G CBI b. Provide a list of chemicals or pollutants known or believed to be present in this source of process wastewater. If a list is readily available, attach it to the survey with this question number and your site ID written on the upper right corner. If a chemical or pollutant originates from a commercial cleaning solution (e.g., solutions used to clean and wash equipment), provide the vendor name of the cleaning product and the product code, if known.

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

G CBI c. Provide the wastewater flow rate and period of discharge associated with the source checked above.

_____ gpm _____ hours per day _____ days per year

OR: _____ gallons per day _____ days per year

COMPLETE A COPY OF QUESTION 2C-13 FOR EACH AGGLOMERATION SOURCE GENERATING PROCESS WASTEWATER NOT ASSOCIATED WITH A WAPC SYSTEM OR STORM WATER.

G CBI **2C-13.**d. **(cont.)** Indicate the destination of this wastewater stream. Check (✓) **ALL** that apply.

- **G** Discharge to treatment *(specify treatment system)*: _____
- **G** Discharge without treatment by pipeline, sewer, or other conveyance to surface water *(specify outfall number)*: _____
- **G** Discharge without treatment by pipeline, sewer, or other conveyance to POTW *(specify designation for permit monitoring location)*:

  _____
- **G** Discharge without treatment by pipeline, sewer, or other conveyance to PrOTW *(specify designation for permit monitoring location if applicable)*: _____
- **G** Zero discharge or alternative disposal methods:
  - **G** Deep-well injection
  - **G** Evaporation *(specify method)*: _____
  - **G** Percolation ponds
  - **G** Spray irrigation
  - **G** Contract hauled
    (specify disposal rate, including transportation): $ _____ per gallon
    (specify destination/disposal method): _____
  - **G** Incineration
  - **G** Other *(specify)*: _____

G CBI **2C-14.** Provide information on any major process modifications and/or shut downs which have occurred for this agglomeration process since 1993.

Shut Down or Modification?	Date	Description

G CBI **2C-15.** Provide information on any publicly announced process modifications and/or shut downs planned to occur during the next five years (1998 to 2002) at the agglomeration process.

Shut Down or Modification?	Anticipated Date	Description

G CBI **2C-16.** Indicate **ALL** pollution prevention (waste reduction) or management practices implemented by your site for the agglomeration process and describe the practice as it is implemented. Describe all processes where by-products and wastes are recovered for reuse or sold as a raw material feedstock. Discuss the percent recovered.

Management Practices	Description of Practice
G Management of spillage and losses from raw material handling operations associated with this agglomeration process	
G Management of runoff from raw material or product storage piles associated with this agglomeration process	
G Management of fugitive discharges of process wastewaters and materials to the agglomeration process noncontact cooling	
G Surveillance and corrective action programs for oil discharges from large NCCW flows associated with this agglomeration process	
G Collection and treatment and/or disposal of storm water from any areas associated with the agglomeration process (specify manufacturing processes or other collection areas in the description)	
G Collection and treatment and/or disposal of landfill leachate from any landfills associated with this agglomeration process	
G Collection and treatment and/or disposal of contaminated ground water associated with this agglomeration process	
G Other *(specify)*:	
G Other *(specify)*:	
G Other *(specify)*:	

G CBI **2C-17.** Attach a process flow diagram (PFD) that shows this agglomeration process and the water use associated with the process. You are **NOT** required to create a new PFD if an existing diagram will suffice. Number the diagram in the upper right corner, and include your site ID number (as shown on the cover page of Part A). Specific instructions for including the PFD, along with an example diagram, are provided below. **Flow rates are NOT required on the diagrams.**

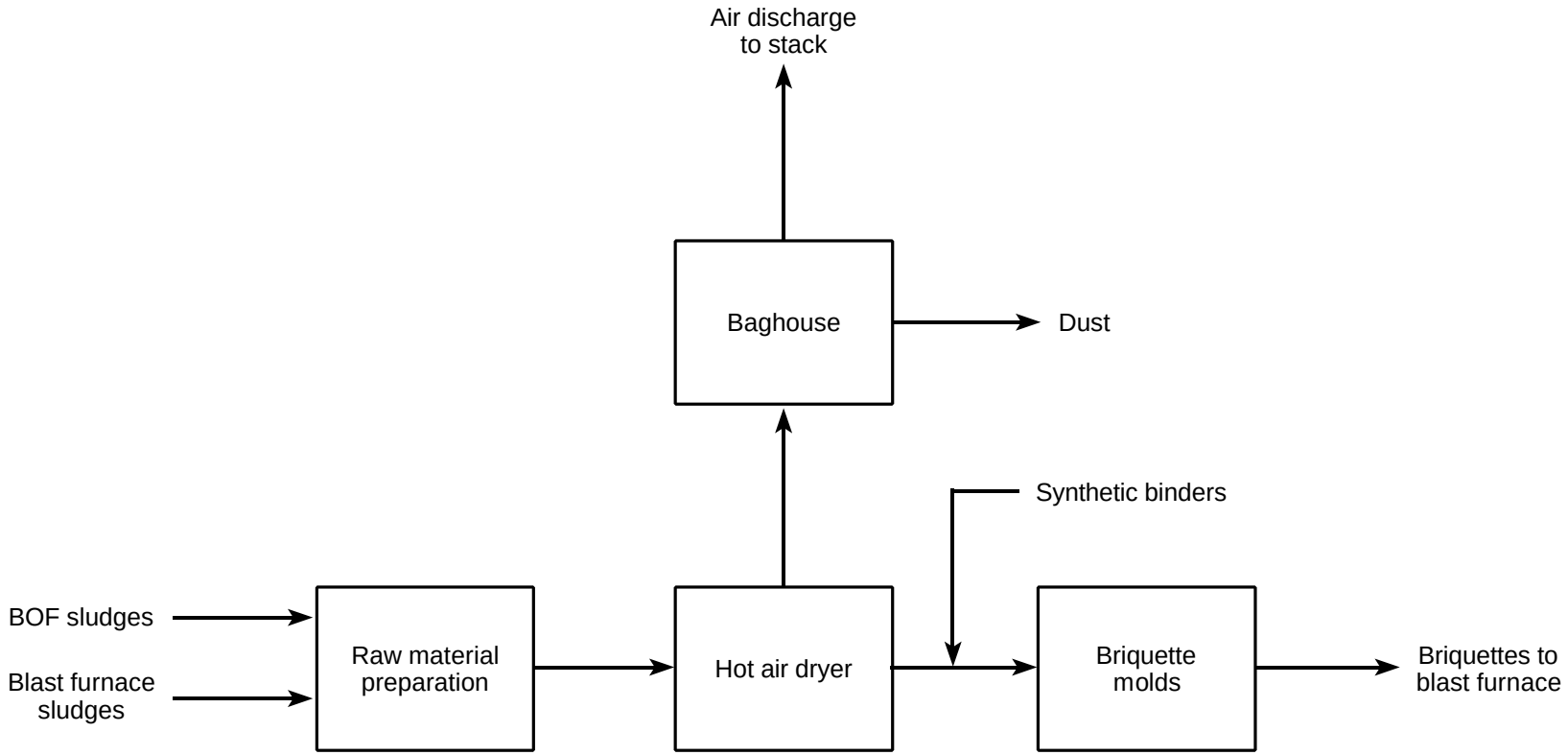
Provide the PFD number assigned to this agglomeration PFD. **If the process is already shown on a PFD provided elsewhere in this survey, provide the PFD number and review the following list for completeness.** If you need assistance, call the Technical Information Help Line at (800) 357-7075.

Agglomeration process PFD-_____

Process Flow Diagram Checklist

Be sure...	✓
All agglomeration operations are included. Include those operations which do not generate process wastewater.	**G**
All air pollution control systems are included. Label each system as being either wet or dry. Water streams for all wet air pollution control systems must be shown, including all recycle streams and all treatment processes within recycle loops.	**G**
Any recycle or reuse of process wastewater or other waters is indicated clearly on the diagram.	**G**
Any in-process wastewater treatment or reuse technologies are indicated. Show and label all treatment units and all recycle loops.	**G**
Significant losses of water (e.g., evaporation) are shown.	**G**
All materials entering each operation and all products and wastes exiting each operation are identified. Wastes include wastewater, sludges, baghouse dust, and point-source air emissions. Noncontact cooling water systems which do not contain process wastewater and do not discharge to process wastewater systems do not need to be included.	**G**
All process wastewater streams are identified. When sources and destinations of process wastewater are not shown on the diagram (i.e., the stream is entering from or exiting to a location not shown on the diagram), describe the source or destination (e.g., "from river" or "to wastewater treatment") and add the PFD number, when appropriate, where the stream's previous or next location can be seen.	**G**
The PFD number and your site ID number are written on the diagram.	**G**
If you believe that the diagram should be treated as confidential, stamp it "Confidential" or write "Confidential" or "CBI" across the top. If any diagram is not marked "Confidential", it will be considered nonconfidential under 40 CFR Part 2, Subpart B.	**G**

Site ID **XXXX**
PFD **6**



Agglomeration Process (Briquetting)
Example Process Flow Diagram

COMMENTS FOR SECTION 2C: BRIQUETTING (AND OTHER AGGLOMERATION PROCESSES)

Cross reference your comments by question number and indicate the confidential status of your comment by checking (✓) the box in the column titled "CBI" (Confidential Business Information). If you need additional space, photocopy this page before writing on it and number each copy in the space provided in the upper right corner.

Question Number	CBI	Comment
	G	
	G	
	G	
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	G	
	G	
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	G	
	G	
	G	
	G	
	G	
	G	
	G	

SECTION 2D. BLAST FURNACE IRONMAKING

TECHNICAL INFORMATION HELP LINE: (800) 357-7075

IS BLAST FURNACE IRONMAKING PERFORMED AT THIS SITE?

G YES (CONTINUE)

G NO (SKIP TO SECTION 2E)

THROUGHOUT THIS SECTION, YOU WILL BE REQUIRED TO PROVIDE INFORMATION FOR **ALL** OPERABLE UNITS AND WATER SYSTEMS RELATED TO BLAST FURNACE IRONMAKING WHICH WERE ON SITE DURING 1997, INCLUDING UNITS AND WATER SYSTEMS WHICH MAY HAVE BEEN IDLE FOR AN EXTENDED PERIOD OF TIME DUE TO CIRCUMSTANCES SUCH AS MARKET CONDITIONS, MAJOR REBUILDS, OR LABOR DISPUTES. IF AN OPERABLE UNIT OR WATER SYSTEM WAS NOT IN OPERATION DURING 1997, SUBSTITUTE THE MOST RECENT CALENDAR YEAR WHEN SUCH CIRCUMSTANCES DID NOT EXIST. NOTE THE YEAR OF OPERATION AND THE CIRCUMSTANCES IN THE COMMENTS AT THE END OF THIS SECTION, AND PROVIDE DATA FROM THAT CALENDAR YEAR.

G CBI **2D-1.** How many operable blast furnaces were on site during **1997**? _____

G CBI **2D-2.** Provide a list of the operable blast furnaces at this site. Use the site designation for each blast furnace on the list (e.g., No. 1 blast furnace).

_____ _____

_____ _____

G CBI **2D-3.** Identify which blast furnaces use shared water systems for the recycle of process wastewater. The water systems referred to in this question are the systems used to clean and cool gases exiting the blast furnace.

	Water System #1	Water System #2	Water System #3
Blast Furnace Designations (corresponding to Question 2D-2)			

HOW MANY **OPERABLE BLAST FURNACES** WERE ON SITE DURING **1997**? _____

COMPLETE A COPY OF QUESTION 2D-4 FOR **EACH** OPERABLE BLAST FURNACE. NUMBER EACH COPY OF QUESTION 2D-4 IN THE SPACE PROVIDED IN THE UPPER RIGHT CORNER. NOTE: QUESTION 2D-4 IS THREE PAGES LONG.

G CBI **2D-4.**a. Provide the site designation for this blast furnace. The blast furnace designation should correspond with a response to Question 2D-2.

_____

G CBI b. What year was iron first produced in this blast furnace? _____

G CBI c. What is the total rated capacity of this blast furnace in tons per year of iron?

_____ tons/year (to three significant figures, e.g., 953,000 tons/year)

G CBI d. What is the annual number of operating hours used to determine the total rated capacity?

_____ hours/year

G CBI e. Provide reline information for this blast furnace.

Date of last major reline completed: _____ (month/year)

Next anticipated major reline (best current projection): _____ (month/year)

G CBI f. Provide the typical operating characteristics of this blast furnace.

Operating top pressure: _____ psig

Operating top temperature: _____ °F

Blast temperature: _____ °F

Gas cooler outlet gas temperature: _____ °F

Typical yield _____ tons of iron/ton of charge material

G CBI g. Provide annual production data for this blast furnace for each of the five calendar years 1993 through 1997. Report the tons of iron produced as the amount of iron tapped from the blast furnace.

Year	Iron Produced (tons of hot metal tapped/year)
1993	
1994	
1995	
1996	
1997	

COMPLETE A COPY OF QUESTION 2D-4 FOR EACH OPERABLE BLAST FURNACE.

G CBI **2D-4.**h. **(cont.)** Indicate **ALL** sources of water used for moisture addition to the burden or to the furnace. Provide the estimated percentage of water contributed by each source. The percentages should add to 100 percent.

- **G** Plant service water (city, well, or surface water which has not been used elsewhere on site) _____ %
- **G** Noncontact cooling water (specify manufacturing process(es)): _____ _____ %
- **G** Treated blast furnace wastewater _____ %
- **G** Treated process wastewater *(specify manufacturing process(es))*: _____ _____ %
- **G** Untreated process wastewater *(specify manufacturing process(es))*: _____ _____ %
- **G** Treated storm water *(specify manufacturing process(es) or other collection area(s))*: _____ _____ %
- **G** Untreated storm water *(specify manufacturing process(es) or other collection area(s))*: _____ _____ %
- **G** Other *(specify)*: _____ _____ %

Total 100 %

- **G** None

G CBI i. Check (✓) **ALL** iron-containing raw materials charged to this blast furnace. Indicate the typical pounds charged per net ton of hot metal manufactured.

Raw Material	Pounds Charged Per Ton of Hot Metal Tapped
G Iron - ore	
G Iron - pellets	
G Iron - sinter	
G Iron - briquetted materials	
G Iron - mill scale	
G Iron - flux pellets	
G Iron - BOF slag	
G Iron - scrap	
G Iron - Other *(specify)*:	
G Iron - Other *(specify)*:	
G Iron - Other *(specify)*:	

COMPLETE A COPY OF QUESTION 2D-4 FOR EACH OPERABLE BLAST FURNACE.

G CBI **2D-4.**j. **(cont.)** Check (✓) **ALL** non-iron-containing raw materials charged to this blast furnace. Indicate the typical quantity charged per net ton of hot metal tapped and the appropriate units.

Raw Material	Quantity Charged per Ton of Hot Metal Tapped	Units
G Coke		**G** pounds **G** gallons **G** cubic feet
G Pulverized coal		**G** pounds **G** gallons **G** cubic feet
G Natural gas		**G** pounds **G** gallons **G** cubic feet
G Fuel oil		**G** pounds **G** gallons **G** cubic feet
G Recycled oils		**G** pounds **G** gallons **G** cubic feet
G Waste oils		**G** pounds **G** gallons **G** cubic feet
G Other carbon source *(specify)*:		**G** pounds **G** gallons **G** cubic feet
G Other carbon source *(specify)*:		**G** pounds **G** gallons **G** cubic feet
G Limestone		**G** pounds **G** gallons **G** cubic feet
G Other fluxes *(specify)*:		**G** pounds **G** gallons **G** cubic feet
G Other fluxes *(specify)*:		**G** pounds **G** gallons **G** cubic feet
G Moisture - Steam		**G** pounds **G** gallons **G** cubic feet
G Moisture - Water		**G** pounds **G** gallons **G** cubic feet
G Oxygen		**G** pounds **G** gallons **G** cubic feet
G Other *(specify)*:		**G** pounds **G** gallons **G** cubic feet

HOW MANY **BLAST FURNACE SLAG PITS** WERE ON SITE DURING 1997? A SLAG PIT SEPARATED BY A DIVIDER IS COUNTED AS ONE PIT. _____

COMPLETE A COPY OF QUESTION 2D-5 FOR **EACH** SLAG PIT. NUMBER EACH COPY OF QUESTION 2D-5 IN THE SPACE PROVIDED IN THE UPPER RIGHT CORNER. NOTE: QUESTION 2D-5 IS ONE PAGE LONG.

G CBI **2D-5.**a. Provide the designations of the blast furnace(s) associated with this slag pit. Blast furnace designations should correspond to the response to Question 2D-2. _____

_____

G CBI b. Indicate the location of the slag pit with respect to the blast furnace(s) listed in Question 2D-5.a.

G Adjacent **G** Remote

G CBI c. Provide the length, width, and depth of this slag pit.

_____ feet long _____ feet wide _____ feet deep

G CBI d. How much slag is processed in this slag pit? _____ tons/year

G CBI e. Indicate whether any water is used for slag cooling or quenching.

G Yes (continue)

G No (SKIP to Question 2D-6)

G CBI f. Indicate the type of water flow in the slag pit.

G Open - once-through **G** Recirculation

G CBI g. Indicate which type(s) of water are used for slag cooling/quenching or granulated slag operations. Check (✓) **ALL** that apply. Also, indicate the volume of each type of water used. This volume is the flow rate of quench water applied to the slag; any discharges from slag quenching should be reported in Question 2D-8.

Type of Water	Flow Rate (gallons/month)
G Plant service water (city, well, or surface water which has not been used elsewhere on site)	
G Noncontact cooling water *(specify manufacturing process(es))*:	
G Treated blast furnace process wastewater	
G Treated wastewater *(specify manufacturing process(es))*:	
G Untreated wastewater *(specify manufacturing process(es))*:	
G Treated storm water *(specify manufacturing process(es) or other collection area(s))*:	
G Untreated storm water *(specify manufacturing process(es) or other collection area(s))*:	
G Other *(specify)*:	
G Other *(specify)*:	

HOW MANY **OPERABLE GAS COOLING AND CLEANING SYSTEMS** WERE ON SITE AT THE BLAST FURNACES DURING **1997**? A GAS COOLING AND CLEANING SYSTEM MAY INCLUDE MULTIPLE DEVICES SERVING THE SAME PROCESSING UNIT. _____

COMPLETE A COPY OF QUESTION 2D-6 FOR **EACH** OPERABLE GAS COOLING AND CLEANING SYSTEM. NUMBER EACH COPY OF QUESTION 2D-6 IN THE SPACE PROVIDED IN THE UPPER RIGHT CORNER. NOTE: QUESTION 2D-6 IS THREE PAGES LONG.

IF YOUR SITE DOES NOT HAVE GAS COOLING AND CLEANING ASSOCIATED WITH ANY BLAST FURNACES ON SITE, **CHECK THE BOX TO THE RIGHT AND SKIP TO QUESTION 2D-7.** **G**

G CBI **2D-6.**a. Provide the designation(s) of the blast furnace(s) and all other operations associated with this gas cooling and cleaning system. Blast furnace designations should correspond with response(s) to Question 2D-2. If information for this gas cooling and cleaning system is already provided elsewhere in this survey, answer Question 2D-6.a., check the box to the right, and SKIP to Question 2D-7. **G**

_____

G CBI b. This gas cooling and cleaning system controls emissions from which of the following processes? Check (✓) **ALL** that apply.

- **G** Raw material handling, preparation, and storage
- **G** Blast furnace gas cleaning
- **G** Blast furnace casting
- **G** Storage area fugitive dust emissions
- **G** Pig machine emissions
- **G** Slag handling
- **G** Building evacuation
- **G** Other *(specify)*: _____
- **G** Other *(specify)*: _____

G CBI c. Indicate the devices in this gas cooling and cleaning system. Check (✓) **ALL** that apply.

- **G** Venturi scrubber
- **G** Spray chamber
- **G** Evaporation chamber
- **G** Separator
- **G** Demister
- **G** Packed tower
- **G** Other *(specify)*: _____
- **G** Other *(specify)*: _____

G CBI d. Provide the gas or air flow through the system in dry standard cubic feet per minute (dscfm).

_____ dscfm

G CBI e. Is the water recirculated in a system dedicated for this device or applied once-through?

- **G** Recirculated (continue)
- **G** Once-through (SKIP to Question 2D-6.l)

G CBI f. Is any treatment and/or conditioning (e.g., chemical additions) performed in the recirculating loop?

- **G** Yes (continue)
- **G** No (SKIP to Question 2D-6.j)

G CBI g. Does the treatment in the recirculating loop also treat wastewater from other processes?

- **G** No - Dedicated treatment
- **G** Yes - Treatment shared with other processes

Specify the processes: _____

COMPLETE A COPY OF QUESTION 2D-6 FOR EACH OPERABLE GAS COOLING AND CLEANING SYSTEM.

G CBI **2D-6.**h. **(cont.)** Check (✓) **ALL** treatment units and/or treatment processes which are included in the recirculating loop.

- **G** Clarifiers
- **G** Classifiers
- **G** Cooling towers
- **G** Earthen Lagoons
  - **G** Lined *(specify liner type)*:
    - **G** Clay
    - **G** Synthetic
    - **G** Other *(specify)*: _____
  - **G** Unlined
- **G** Oil skimmers
- **G** Scale pits or scalping tanks
- **G** Sludge dewatering units (e.g., vacuum filter, pressure filtration, etc.)
- **G** Water filters (e.g., sand, multimedia, etc.)
- **G** Water softeners
- **G** Other *(specify)*: _____
- **G** Other *(specify)*: _____
- **G** None

G CBI i. Indicate chemical additions to the water recirculation system. Check (✓) **ALL** that apply.

- **G** Acid
- **G** Caustic (sodium hydroxide)
- **G** Corrosion inhibitor
- **G** Lime
- **G** Polymer
- **G** Scale inhibitor
- **G** Surfactant
- **G** Other *(specify)*: _____
- **G** Other *(specify)*: _____
- **G** None

G CBI j. Provide the design flow of water through the recirculating loop. _____ gpm

G CBI k. Provide the average recirculation rate of water through the gas cooling and cleaning system and period of operation.

_____ gpm _____ hours per day _____ days per year

G CBI l. Provide the average rate at which new water is added to the system (for once-through systems, provide the influent flow rate; for recirculating systems, provide the makeup flow rate).

_____ gallons per day _____ days per year

G CBI m. Indicate **ALL** sources for water addition. Provide the percentage of water contributed by each source. The percentages should add to 100 percent.

- **G** Plant service water (city, well, or surface water which has not been used elsewhere on site) _____ %
- **G** Noncontact cooling water *(specify manufacturing process(es))*: _____ _____ %
- **G** Treated process wastewater *(specify manufacturing process(es))*: _____ _____ %
- **G** Untreated process wastewater *(specify manufacturing process(es))*: _____ _____ %
- **G** Treated storm water *(specify manufacturing process(es) or other collection area(s))*: _____ _____ %
- **G** Untreated storm water *(specify manufacturing process(es) or other collection area(s))*: _____ _____ %
- **G** Other *(specify)*: _____ _____ %

Total: 100 %

COMPLETE A COPY OF QUESTION 2D-6 FOR EACH OPERABLE GAS COOLING AND CLEANING SYSTEM.

G CBI **2D-6.**n. **(cont.)** Provide the average discharge rate from the system and period of discharge (for recirculating systems, provide the blowdown rate).

_____ gpm _____ hours per day _____ days per year

OR: _____ gallons per day _____ days per year

G CBI o. Indicate the destination of wastewater discharge or blowdown. Check (✓) **ALL** that apply.

- **G** Discharge to treatment *(specify treatment system)*: _____
- **G** Discharge without treatment by pipeline, sewer, or other conveyance to surface water *(specify outfall number)*: _____
- **G** Discharge without treatment by pipeline, sewer, or other conveyance to POTW *(specify designation for permit monitoring location)*:

  _____
- **G** Discharge without treatment by pipeline, sewer, or other conveyance to PrOTW *(specify designation for permit monitoring location if applicable)*: _____
- **G** Zero discharge or alternative disposal methods:
  - **G** Deep-well injection
  - **G** Evaporation *(specify method)*: _____
  - **G** Percolation pond
  - **G** Spray irrigation
  - **G** Disposal by slag cooling or quenching *(specify volume in gallons/day)*: _____
  - **G** Contract hauled
    (specify disposal rate, including transportation): $ _____ per gallon
    (specify destination/disposal method): _____
  - **G** Incineration
  - **G** Other *(specify)*: _____

G CBI p. Indicate whether gas seals are water flooded.

- **G** Yes
- **G** No

G CBI q. Indicate whether the gas seal water is included in this gas cooling and cleaning system.

- **G** Yes
- **G** No *(specify discharge location)*: _____

G CBI r. Indicate whether the makeup water to the gas seals is from this gas cooling and cleaning system.

- **G** Yes
- **G** No *(specify source)*: _____

G CBI **2D-7.**a. Are any dry air pollution control (DAPC) systems associated with any blast furnaces on site?

G Yes (continue)

G No (SKIP to Question 2D-8)

G CBI b. Indicate the process(es) associated with DAPC systems and the blast furnace designation(s) associated with each process (designation should correspond with a response to Question 2D-2). Check (✓) **ALL** that apply. For each process checked, indicate the type of DAPC system.

Process	Blast Furnace Designation	Type of DAPC System
G Raw material handling, preparation, and storage		**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:
G Blast furnace gas cleaning		**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:
G Blast furnace casting		**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:
G Storage area fugitive dust emissions		**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:
G Pig machine emissions		**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:
G Slag handling		**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:
G Building evacuation associated with the blast furnace		**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:
G Other *(specify)*:		**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:
G Other *(specify)*:		**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:
G Other *(specify)*:		**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:

STOP

EXCLUDING GAS COOLING AND CLEANING SYSTEMS AND STORM WATER, HOW MANY OTHER WASTEWATER SOURCES FROM BLAST FURNACE OPERATIONS ARE PRESENT? _____

COMPLETE A COPY OF QUESTION 2D-8 FOR **EACH** BLAST FURNACE WASTEWATER SOURCE. NUMBER EACH COPY OF QUESTION 2D-8 IN THE SPACE PROVIDED IN THE UPPER RIGHT CORNER. NOTE: QUESTION 2D-8 IS TWO PAGES LONG.

IF YOUR SITE HAS NO BLAST FURNACE SOURCES WHICH CONTRIBUTE PROCESS WASTEWATER NOT ASSOCIATED WITH A GAS COOLING AND CLEANING SYSTEM OR STORM WATER, **CHECK THE BOX TO THE RIGHT AND SKIP TO QUESTION 2D-9.** **G**

2D-8. Provide information for the blast furnaces and related on-site wastewater generating sources.

G CBI a. Indicate the source of process wastewater **NOT** associated with gas cooling and cleaning or storm water. If there is more than one source at this site, complete a copy of this question for **EACH** blast furnace source.

- **G** Raw material handling, preparation, and storage
- **G** Slag quenching
- **G** Blast furnace gas seals
- **G** Equipment cleaning and washdown water
- **G** Other *(specify)*: _____

G CBI b. Provide a list of chemicals or pollutants known or believed to be present in this source of process wastewater. If a list is readily available, attach it to the survey with this question number and your site ID written on the upper right corner. If a chemical or pollutant originates from a commercial cleaning solution (e.g., solutions used to clean and wash equipment), provide the vendor name of the cleaning product and the product code, if known.

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

G CBI c. Provide the wastewater flow rate and period of discharge associated with the source checked above.

_____ gpm _____ hours per day _____ days per year

OR: _____ gallons per day _____ days per year

COMPLETE A COPY OF QUESTION 2D-8 FOR EACH BLAST FURNACE OPERATION SOURCE GENERATING PROCESS WASTEWATER NOT ASSOCIATED WITH A GAS COOLING AND CLEANING SYSTEM OR STORM WATER.

G CBI **2D-8.**d. **(cont.)** Indicate the destination of this wastewater stream. Check (✓) **ALL** that apply.

- **G** Discharge to treatment *(specify treatment system)*: _____
- **G** Discharge without treatment by pipeline, sewer, or other conveyance to surface water *(specify outfall number)*: _____
- **G** Discharge without treatment by pipeline, sewer, or other conveyance to POTW *(specify designation for permit monitoring location)*:

  _____
- **G** Discharge without treatment by pipeline, sewer, or other conveyance to PrOTW *(specify designation for permit monitoring location if applicable)*: _____
- **G** Zero discharge or alternative disposal methods:
  - **G** Deep-well injection
  - **G** Evaporation *(specify method)*: _____
  - **G** Percolation pond
  - **G** Spray irrigation
  - **G** Disposal by slag cooling or quenching *(specify volume in gallons/day)*: _____
  - **G** Contract hauled
    (specify disposal rate, including transportation): $ _____ per gallon
    (specify destination/disposal method): _____
  - **G** Incineration
  - **G** Other *(specify)*: _____

G CBI **2D-9.** Provide information on any major process modifications and/or shut downs which have occurred at any of the blast furnaces since 1993. Provide blast furnace designations in the description. Designation(s) should correspond with response(s) to Question 2D-2.

Shut Down or Modification?	Date	Description

G CBI **2D-10.** Provide information on any publicly announced process modifications and/or shut downs planned to occur during the next five years (1998 to 2002) at any of the blast furnaces. Provide blast furnace designations in the description. Designation(s) should correspond with response(s) to Question 2D-2.

Shut Down or Modification?	Anticipated Date	Description

G CBI **2D-11.** Indicate **ALL** pollution prevention (waste reduction) or management practices implemented by your site for any blast furnaces on site and describe the practice as it is implemented. Describe all processes where by-products and wastes are recovered for reuse or sold as a raw material feedstock. Discuss the percent recovered. Provide the furnace designations in the description. Designation(s) should correspond with response(s) to Question 2D-2.

Management Practices	Description of Practice
G Management of spillage and losses from raw material handling operations associated with the blast furnaces	
G Management of runoff from raw material storage piles associated with the blast furnaces	
G Management of fugitive discharges of process wastewaters and materials to blast furnace noncontact cooling water (NCCW) systems	
G Control of blast furnace gas condensates	
G Surveillance and corrective action programs for oil discharges from large NCCW flows associated with the blast furnaces	
G Collection and treatment and/or disposal of storm water from any areas associated with the blast furnaces (specify manufacturing processes or other collection areas in the description)	
G Control of runoff/leachate and ground water contamination from blast furnace slag pits and slag processing areas	
G Collection and treatment and/or disposal of landfill leachate from any landfills associated with blast furnace wastes	
G Collection and treatment and/or disposal of contaminated ground waters associated with the blast furnaces	
G Other *(specify)*:	

G CBI **2D-12.**a. Indicate which, if any, of the following materials were charged or injected to any blast furnace during the period January 1993 to December 1997.

- **G** Cutting oils or other materials containing chlorinated hydrocarbons
- **G** Oils or other materials containing polychlorinated biphenyl (PCB) compounds
- **G** Any municipal solid wastes, commercial solid waste, or other material containing plastics or plastic residues
- **G** None of the above (SKIP to Question 2D-13)

G CBI b. In the table below, describe the materials specified in Question 2D-12.a. which were charged to the blast furnace, the dates on which these activities occurred, and the purpose of these activities. Indicate blast furnace designations with the purpose. Designations should correspond with responses to Question 2D-2.

Material Description (specify chemical constituents)	Dates Used	Purpose

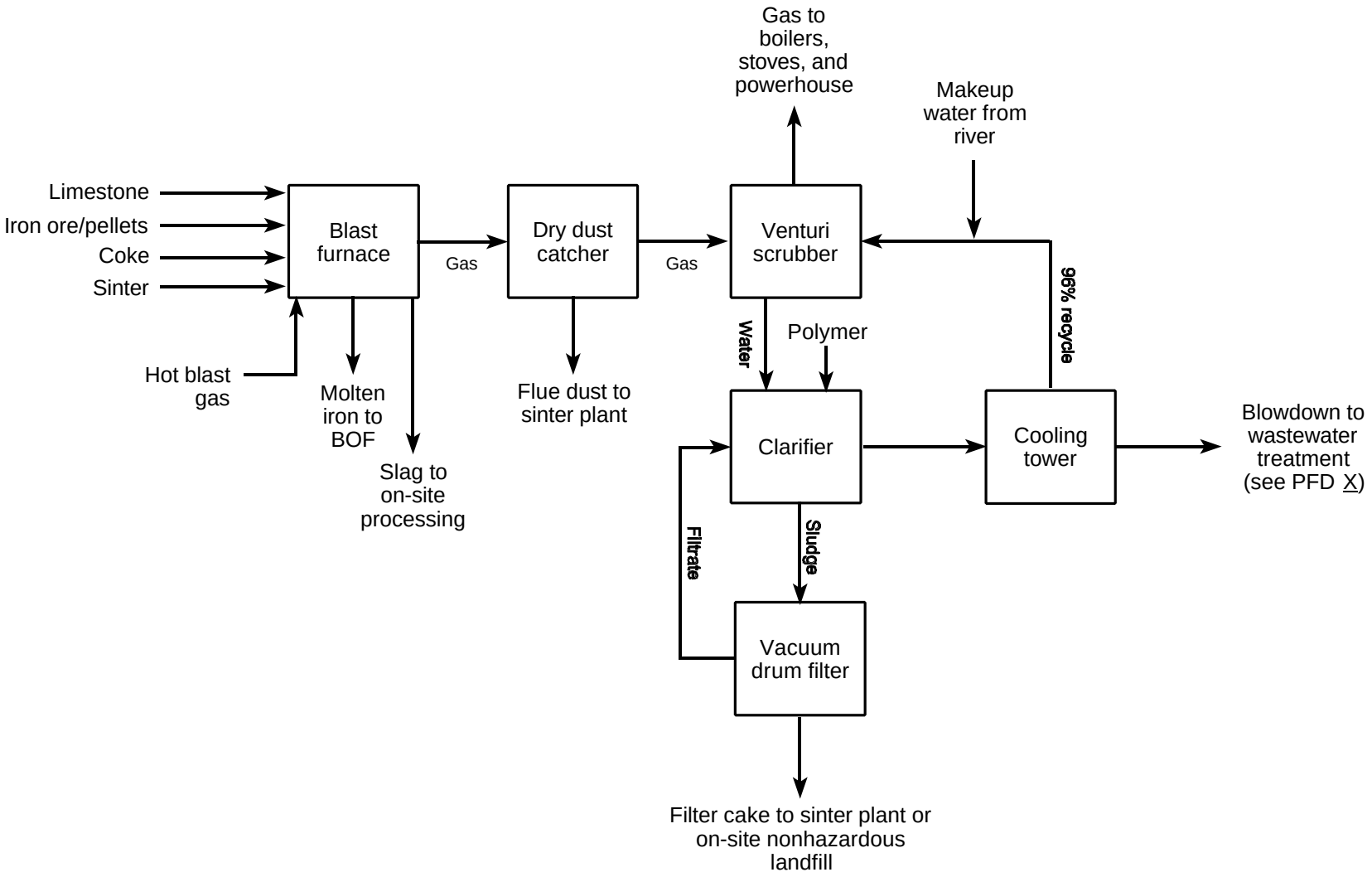
G CBI **2D-13.** Attach a process flow diagram (PFD) that shows the blast furnace ironmaking process and the water use associated with the process. You are **NOT** required to create a new PFD if an existing diagram will suffice. Number the diagram in the upper right corner, and include your site ID number (as shown on the cover page of Part A). Specific instructions for including the PFD, along with an example diagram, are provided below. **Flow rates are NOT required on the diagrams.**

Provide the PFD number(s) assigned to the blast furnace ironmaking PFD. **If the process is already shown on a PFD provided elsewhere in this survey, provide the PFD number and review the following list for completeness.** If you need assistance, call the Technical Information Help Line at (800) 357-7075.

Blast furnace ironmaking PFD-_____

Process Flow Diagram Checklist

Be sure...	✓
All blast furnace ironmaking operations are included. Include those operations which do not generate process wastewater.	**G**
All air pollution control systems are included. Label each system as being either wet or dry. Water streams for all wet air pollution control systems must be shown, including all recycle streams and all treatment processes within recycle loops.	**G**
Any recycle or reuse of process wastewater or other waters is indicated clearly on the diagram.	**G**
Any in-process wastewater treatment or reuse technologies are indicated. Show and label all treatment units and all recycle loops.	**G**
Significant losses of water (e.g., evaporation) are shown.	**G**
All materials entering each operation and all products and wastes exiting each operation are identified. Wastes include wastewater, sludges, baghouse dust, and point-source air emissions. Noncontact cooling water systems which do not contain process wastewater and do not discharge to process wastewater systems do not need to be included.	**G**
All process wastewater streams are identified. When sources and destinations of process wastewater are not shown on the diagram (i.e., the stream is entering from or exiting to a location not shown on the diagram), describe the source or destination (e.g., "from river" or "to wastewater treatment") and add the PFD number, when appropriate, where the stream's previous or next location can be seen.	**G**
The PFD number and your site ID number are written on the diagram(s).	**G**
If you believe that the diagram should be treated as confidential, stamp it "Confidential" or write "Confidential" or "CBI" across the top. If any diagram is not marked "Confidential", it will be considered nonconfidential under 40 CFR Part 2, Subpart B.	**G**



Blast Furnace
Example Process Flow Diagram

COMMENTS FOR SECTION 2D: BLAST FURNACE IRONMAKING

Cross reference your comments by question number and indicate the confidential status of your comment by checking (✓) the box in the column titled "CBI" (Confidential Business Information). If you need additional space, photocopy this page before writing on it and number each copy in the space provided in the upper right corner.

Question Number	CBI	Comment
	G	
	G	
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	G	

SECTION 2E. DIRECT-REDUCED IRONMAKING

TECHNICAL INFORMATION HELP LINE: (800) 357-7075

✓ IS DIRECT-REDUCED IRONMAKING PERFORMED AT THIS SITE?

G YES (CONTINUE)

G NO (SKIP TO SECTION 2F)

THROUGHOUT THIS SECTION, YOU WILL BE REQUIRED TO PROVIDE INFORMATION FOR **ALL** OPERABLE UNITS AND WATER SYSTEMS RELATED TO DIRECT-REDUCED IRONMAKING WHICH WERE ON SITE DURING 1997, INCLUDING UNITS AND WATER SYSTEMS WHICH MAY HAVE BEEN IDLE FOR AN EXTENDED PERIOD OF TIME DUE TO CIRCUMSTANCES SUCH AS MARKET CONDITIONS, MAJOR REBUILDS, OR LABOR DISPUTES. IF AN OPERABLE UNIT OR WATER SYSTEM WAS NOT IN OPERATION DURING 1997, SUBSTITUTE THE MOST RECENT CALENDAR YEAR WHEN SUCH CIRCUMSTANCES DID NOT EXIST. NOTE THE YEAR OF OPERATION AND THE CIRCUMSTANCES IN THE COMMENTS AT THE END OF THIS SECTION, AND PROVIDE DATA FROM THAT CALENDAR YEAR.

G CBI **2E-1.**a. What is the total rated capacity of the DRI plant in tons per year of direct-reduced iron?

_____ tons/year (to three significant figures, e.g., 565,000 tons/year)

G CBI b. What is the annual number of operating hours used to determine the total rated capacity?

_____ hours/year

G CBI **2E-2.** Check (✓) **ALL** raw materials which were charged to the DRI process during **1997**.

G Oxide pellets

G Lump ores

G Other *(specify)*: _____

G Other *(specify)*: _____

G CBI **2E-3.** Provide annual production data for the DRI plant for each of the five calendar years 1993 through 1997.

Year	Direct-Reduced Iron Produced (tons/year)
1993	
1994	
1995	
1996	
1997	

HOW MANY **OPERABLE WET AIR POLLUTION CONTROL (WAPC) SYSTEMS** WERE ON SITE AT THIS DRI PLANT DURING **1997**? A WAPC SYSTEM MAY INCLUDE MULTIPLE DEVICES SERVING THE SAME PROCESSING UNIT.

_____

COMPLETE A COPY OF QUESTION 2E-4 FOR **EACH** OPERABLE WAPC SYSTEM. NUMBER EACH COPY OF QUESTION 2E-4 IN THE SPACE PROVIDED IN THE UPPER RIGHT CORNER. NOTE: QUESTION 2E-4 IS THREE PAGES LONG.

IF YOUR SITE DOES NOT HAVE WET AIR POLLUTION CONTROL ASSOCIATED WITH THIS DRI PLANT, **CHECK THE BOX TO THE RIGHT AND SKIP TO QUESTION 2E-5.** **G**

G CBI **2E-4.**a. Provide the designation(s) of all operations associated with this WAPC system. If information for this WAPC system is already provided elsewhere in this survey, answer Question 2E-4.a., check the box to the right, and SKIP to Question 2E-5. **G**

_____

G CBI b. This WAPC system controls emissions from which of the following processes? Check (✓) **ALL** that apply.

- **G** Raw material handling, preparation, and storage
- **G** Gas cooling and/or cleaning
- **G** Other *(specify)*: _____

G CBI c. Indicate the devices in this WAPC system. Check (✓) **ALL** that apply.

- **G** Venturi scrubber
- **G** Spray chamber
- **G** Evaporation chamber
- **G** Separator
- **G** Demister
- **G** Packed tower
- **G** Other *(specify)*: _____
- **G** Other *(specify)*: _____

G CBI d. Provide the gas or air flow through the system in dry standard cubic feet per minute (dscfm).

_____ dscfm

G CBI e. Is the water recirculated or applied once-through?

- **G** Recirculated (continue)
- **G** Once-through (SKIP to Question 2E-4.l.)

G CBI f. Is any treatment and/or conditioning (e.g., chemical additions) performed in the recirculating loop?

- **G** Yes (continue)
- **G** No (SKIP to Question 2E-4.j.)

G CBI g. Does the treatment in the recirculating loop also treat wastewater from other processes?

- **G** No - Dedicated treatment
- **G** Yes - Treatment shared with other processes

Specify the processes: _____

COMPLETE A COPY OF QUESTION 2E-4 FOR EACH OPERABLE WAPC SYSTEM.

G CBI **2E-4.**h. **(cont.)** Check (✓) **ALL** treatment units and/or treatment processes which are included in the recirculating loop.

- **G** Clarifiers
- **G** Classifiers
- **G** Cooling towers
- **G** Earthen Lagoons
  - **G** Lined *(specify liner type)*:
    - **G** Clay
    - **G** Synthetic
    - **G** Other *(specify)*: _____
  - **G** Unlined
- **G** Oil skimmers
- **G** Scale pits
- **G** Sludge dewatering units (e.g., vacuum filter, pressure filtration, etc.)
- **G** Water filters (e.g., sand, multimedia, etc.)
- **G** Water softeners
- **G** Other *(specify)*: _____
- **G** Other *(specify)*: _____
- **G** None

G CBI i. Indicate chemical additions to the water recirculation system. Check (✓) **ALL** that apply.

- **G** Acid
- **G** Caustic (sodium hydroxide)
- **G** Corrosion inhibitor
- **G** Lime
- **G** Polymer
- **G** Scale inhibitor
- **G** Surfactant
- **G** Other *(specify)*: _____
- **G** Other *(specify)*: _____
- **G** None

G CBI j. Provide the design flow of water through the recirculating loop. _____ gpm

G CBI k. Provide the average recirculation rate of water through the WAPC system and period of operation.

_____ gpm _____ hours per day _____ days per year

G CBI l. Provide the average rate at which new water is added to the system (for once-through systems, provide the influent flow rate; for recirculating systems, provide the makeup flow rate).

_____ gallons per day _____ days per year

G CBI m. Indicate **ALL** sources for water addition. Provide the percentage of water contributed by each source. The percentages should add to 100 percent.

- **G** Plant service water (city, well, or surface water which has not been used elsewhere on site) _____ %
- **G** Noncontact cooling water *(specify manufacturing process(es))*: _____ _____ %
- **G** Treated process wastewater *(specify manufacturing process(es))*: _____ _____ %
- **G** Untreated process wastewater *(specify manufacturing process(es))*: _____ _____ %
- **G** Treated storm water *(specify manufacturing process(es) or other collection area(s))*: _____ _____ %
- **G** Untreated storm water *(specify manufacturing process(es) or other collection area(s))*: _____ _____ %
- **G** Other *(specify)*: _____ _____ %

Total 100 %

COMPLETE A COPY OF QUESTION 2E-4 FOR EACH OPERABLE WAPC SYSTEM.

G CBI **2E-4.**n. **(cont.)** Provide the average discharge rate from the system and period of discharge (for recirculating systems, provide the blowdown rate).

_____ gpm _____ hours per day _____ days per year

OR: _____ gallons per day _____ days per year

G CBI o. Indicate the destination of wastewater discharge or blowdown. Check (✓) **ALL** that apply.

- **G** Discharge to treatment *(specify treatment system)*: _____
- **G** Discharge without treatment by pipeline, sewer, or other conveyance to surface water *(specify outfall number)*: _____
- **G** Discharge without treatment by pipeline, sewer, or other conveyance to POTW *(specify designation for permit monitoring location)*:

  _____
- **G** Discharge without treatment by pipeline, sewer, or other conveyance to PrOTW *(specify designation for permit monitoring location if applicable)*: _____
- **G** Zero discharge or alternative disposal methods:
  - **G** Deep-well injection
  - **G** Evaporation *(specify method)*: _____
  - **G** Percolation pond
  - **G** Spray irrigation
  - **G** Contract hauled
    (specify disposal rate, including transportation): $ _____ per gallon
    (specify destination/disposal method): _____
  - **G** Incineration
  - **G** Other *(specify)*: _____

G CBI **2E-5.**a. Are any dry air pollution control (DAPC) systems associated with the DRI plant?

G Yes (continue)

G No (SKIP to Question 2E-6)

G CBI b. Indicate the process(es) associated with DAPC systems in the DRI plant. Check (✓) **ALL** that apply. For each process checked, indicate the type of DAPC system.

Process	Type of DAPC System
G Raw material handling, preparation, and storage associated with the DRI plant	**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:
G Gas cooling and/or cleaning	**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:
G Other *(specify)*:	**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:
G Other *(specify)*:	**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:
G Other *(specify)*:	**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:

STOP

EXCLUDING WAPC SYSTEMS AND STORM WATER, HOW MANY OTHER WASTEWATER SOURCES FROM DRI PLANT OPERATIONS ARE PRESENT? _____

COMPLETE A COPY OF QUESTION 2E-6 FOR **EACH** DRI PLANT WASTEWATER SOURCE. NUMBER EACH COPY OF QUESTION 2E-6 IN THE SPACE PROVIDED IN THE UPPER RIGHT CORNER. NOTE: QUESTION 2E-6 IS TWO PAGES LONG.

IF YOUR SITE HAS NO DRI PLANT SOURCES WHICH CONTRIBUTE PROCESS WASTEWATER NOT ASSOCIATED WITH A WAPC SYSTEM OR STORM WATER, **CHECK THE BOX TO THE RIGHT AND SKIP TO QUESTION 2E-7.** **G**

2E-6. Provide information for the DRI plant and related on-site wastewater generating sources.

G CBI a. Indicate the source of process wastewater not associated with wet air pollution control or storm water. If there is more than one source at this site, complete a copy of this question for **EACH** DRI plant source.

G Raw material handling, preparation, and storage
G Equipment cleaning and washdown water
G Other *(specify)*: _____

G CBI b. Provide a list of chemicals or pollutants known or believed to be present in this source of process wastewater. If a list is readily available, attach it to the survey with this question number and your site ID written on the upper right corner. If a chemical or pollutant originates from a commercial cleaning solution (e.g., solutions used to clean and wash equipment), provide the vendor name of the cleaning product and the product code, if known.

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

G CBI c. Provide the wastewater flow rate and period of discharge associated with the source checked above.

_____ gpm _____ hours per day _____ days per year

OR: _____ gallons per day _____ days per year

COMPLETE A COPY OF QUESTION 2E-6 FOR EACH DIRECT-REDUCED IRONMAKING SOURCE GENERATING PROCESS WASTEWATER NOT ASSOCIATED WITH A WAPC SYSTEM OR STORM WATER.

G CBI **2E-6.**d. **(cont.)** Indicate the destination of this wastewater stream. Check (✓) **ALL** that apply.

- **G** Discharge to treatment *(specify treatment system)*: _____
- **G** Discharge without treatment by pipeline, sewer, or other conveyance to surface water *(specify outfall number)*: _____
- **G** Discharge without treatment by pipeline, sewer, or other conveyance to POTW *(specify designation for permit monitoring location)*:

  _____
- **G** Discharge without treatment by pipeline, sewer, or other conveyance to PrOTW *(specify designation for permit monitoring location if applicable)*: _____
- **G** Zero discharge or alternative disposal methods:
  - **G** Deep-well injection
  - **G** Evaporation *(specify method)*: _____
  - **G** Percolation pond
  - **G** Spray irrigation
  - **G** Contract haul
    (specify disposal rate, including transportation): $ _____ per gallon
    (specify destination/disposal method): _____
  - **G** Incineration
  - **G** Other *(specify)*: _____

G CBI **2E-7.** Provide information on any major process modifications and/or shut downs which have occurred for this DRI plant since 1993.

Shut Down or Modification?	Date	Description

G CBI **2E-8.** Provide information on any publicly announced process modifications and/or shut downs planned to occur during the next five years (1998 to 2002) at the DRI plant.

Shut Down or Modification?	Anticipated Date	Description

G CBI **2E-9.** Indicate **ALL** pollution prevention (waste reduction) or management practices implemented by your site for the DRI plant and describe the practice as it is implemented. Describe all processes where by-products and wastes are recovered for reuse or sold as a raw material feedstock. Discuss the percent recovered.

Management Practices	Description of Practice
G Management of spillage and losses from raw material handling operations associated with the DRI plant	
G Management of runoff from raw material or product storage piles associated with the DRI plant	
G Management of fugitive discharges of process wastewaters and materials to DRI plant noncontact cooling water (NCCW) systems	
G Surveillance and corrective action programs for oil discharges from large NCCW flows associated with the DRI plant	
G Collection and treatment and/or disposal of storm water from any areas associated with the DRI plant (specify manufacturing processes or other collection areas in the description)	
G Collection and treatment and/or disposal of landfill leachate from any landfills associated with DRI plant wastes	
G Collection and treatment and/or disposal of contaminated ground waters associated with the DRI plant	
G Other *(specify)*:	
G Other *(specify)*:	
G Other *(specify)*:	

G CBI **2E-10.** Attach a process flow diagram (PFD) that shows the DRI process and the water use associated with the process. You are **NOT** required to create a new PFD if an existing diagram will suffice. Number the diagram in the upper right corner, and include your site ID number (as shown on the cover page of Part A). Specific instructions for including the PFD, along with an example diagram, are provided below. **Flow rates are NOT required on the diagrams.**

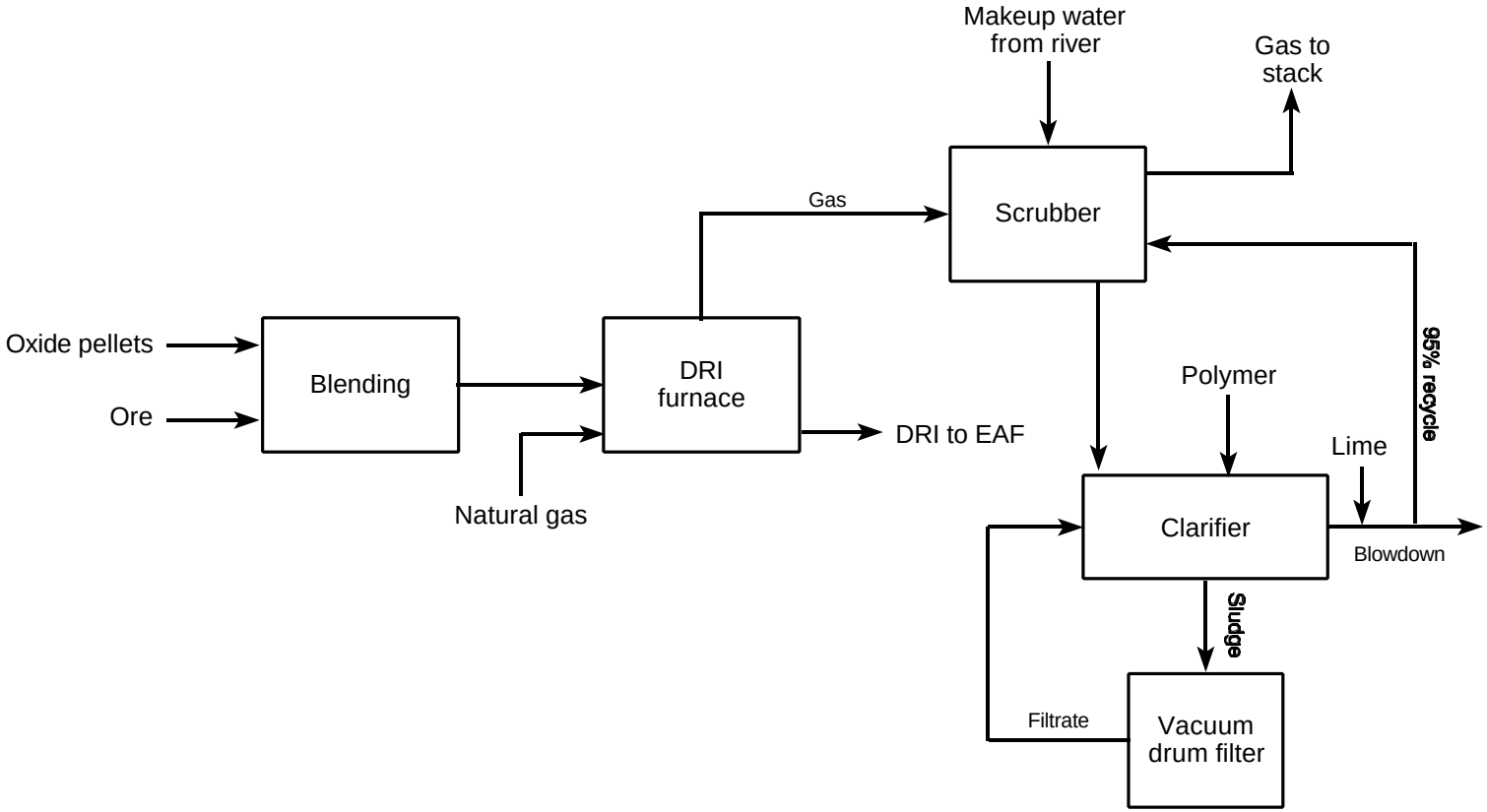
Provide the PFD number assigned to the DRI plant PFD. **If the process is already shown on a PFD provided elsewhere in this survey, provide the PFD number and review the following list for completeness.** If you need assistance, call the Technical Information Help Line at (800) 357-7075.

DRI plant PFD-_____

Process Flow Diagram Checklist

Be sure...	✓
All direct-reduced ironmaking operations are included. Include those operations which do not generate process wastewater.	**G**
All air pollution control systems are included. Label each system as being either wet or dry. Water streams for all wet air pollution control systems must be shown, including all recycle streams and all treatment processes within recycle loops.	**G**
Any recycle or reuse of process wastewater or other waters is indicated clearly on the diagram.	**G**
Any in-process wastewater treatment or reuse technologies are indicated. Show and label all treatment units and all recycle loops.	**G**
Significant losses of water (e.g., evaporation) are shown.	**G**
All materials entering each operation and all products and wastes exiting each operation are identified. Wastes include wastewater, sludges, baghouse dust, and point-source air emissions. Noncontact cooling water systems which do not contain process wastewater and do not discharge to process wastewater systems do not need to be included.	**G**
All process wastewater streams are identified. When sources and destinations of process wastewater are not shown on the diagram (i.e., the stream is entering from or exiting to a location not shown on the diagram), describe the source or destination (e.g., "from river" or "to wastewater treatment") and add the PFD number, when appropriate, where the stream's previous or next location can be seen.	**G**
The PFD number and your site ID are written on the diagram.	**G**
If you believe that the diagram should be treated as confidential, stamp it "Confidential" or write "Confidential" or "CBI" across the top. If any diagram is not marked "Confidential", it will be considered nonconfidential under 40 CFR Part 2, Subpart B.	**G**

Site ID XXXX
PFD 8



2E-11

DRI = Direct-Reduced Iron
EAF = Electric Arc Furnace

Direct-Reduced Ironmaking
Example Process Flow Diagram

COMMENTS FOR SECTION 2E: DIRECT-REDUCED IRONMAKING

Cross reference your comments by question number and indicate the confidential status of your comment by checking (✓) the box in the column titled "CBI" (Confidential Business Information). If you need additional space, photocopy this page before writing on it and number each copy in the space provided in the upper right corner.

Question Number	CBI	Comment
	G	
	G	
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	G	

SECTION 2F. BASIC OXYGEN FURNACE STEELMAKING

TECHNICAL INFORMATION HELP LINE: (800) 357-7075

✓ IS BASIC OXYGEN FURNACE (BOF) STEELMAKING PERFORMED AT THIS SITE?

G YES (CONTINUE)

G NO (SKIP TO SECTION 2G)

THROUGHOUT THIS SECTION, YOU WILL BE REQUIRED TO PROVIDE INFORMATION FOR **ALL** OPERABLE UNITS AND WATER SYSTEMS RELATED TO BOF STEELMAKING WHICH WERE ON SITE DURING 1997, INCLUDING UNITS AND WATER SYSTEMS WHICH MAY HAVE BEEN IDLE FOR AN EXTENDED PERIOD OF TIME DUE TO CIRCUMSTANCES SUCH AS MARKET CONDITIONS, MAJOR REBUILDS, OR LABOR DISPUTES. IF AN OPERABLE UNIT OR WATER SYSTEM WAS NOT IN OPERATION DURING 1997, SUBSTITUTE THE MOST RECENT CALENDAR YEAR WHEN SUCH CIRCUMSTANCES DID NOT EXIST. NOTE THE YEAR OF OPERATION AND THE CIRCUMSTANCES IN THE COMMENTS AT THE END OF THIS SECTION, AND PROVIDE DATA FROM THAT CALENDAR YEAR.

G CBI **2F-1.** How many operable BOFs were on site during **1997**? _____

G CBI **2F-2.** A BOF shop consists of a building or structure containing one or more BOFs and ancillary processes and equipment (e.g., hot metal desulfurization; hot metal charging; scrap charging; oxygen and flux addition; furnace tapping; ladle preparation; deslagging and slag handling; and primary and secondary air emission control equipment). This definition of a BOF shop is used for this survey. In the top row of the table below, provide a list of the operable BOF shops that were on site during **1997**. Use the site terminology or site designation for each BOF shop. Fill in each column with the site designation for each furnace at each shop.

BOF Shop Designation:			
Individual Furnace Designations:			

HOW MANY **OPERABLE BOF SHOPS** WERE ON SITE DURING **1997**? _____

COMPLETE A COPY OF THE REMAINDER OF THIS SECTION (QUESTIONS 2F-3 THROUGH 2F-17 AND A COMMENTS PAGE IF NECESSARY) FOR **EACH** OPERABLE BOF SHOP. NUMBER EACH COPY OF QUESTIONS 2F-3 THROUGH 2F-17 IN THE SPACE PROVIDED AT THE TOP OF EACH PAGE.

G CBI **2F-3.** Provide the designation of this BOF shop. The BOF shop designation should correspond with a response to Question 2F-2. _____

_____

G CBI **2F-4.** What year was steel first produced at this BOF shop? _____

G CBI **2F-5.**a. What is the total rated capacity of raw steel for this shop in tons per year?

_____ tons/year (to three significant figures, e.g., 995,000 tons/year)

G CBI b. What is the annual number of heats used to determine the total rated capacity?

_____ heats/year

G CBI **2F-6.** Provide annual production data for this BOF shop for each of the five calendar years 1993 through 1997.

Year	BOF Steel Produced (tons/year)
1993	
1994	
1995	
1996	
1997	

G CBI **2F-7.** Check (✓) **ALL** raw materials and alloying elements which were charged to the BOFs in this shop in **1997**. If you have a previously prepared list of raw materials and alloying elements charged to the BOFs in this shop, attach it to the survey, write your site ID (shown on the cover page of Part A) and this question number on the upper right corner of the list, check (✓) the box to the right, and SKIP to Question 2F-8. **G**

G	Molten iron	**G**	Other *(specify)*: _____
G	Steel scrap	**G**	Other *(specify)*: _____
G	Iron pigs	**G**	Other *(specify)*: _____
G	Iron ore	**G**	Other *(specify)*: _____
G	Direct-reduced iron	**G**	Other *(specify)*: _____
G	Beach iron/scrap	**G**	Other *(specify)*: _____
G	Burnt lime	**G**	Other *(specify)*: _____
G	Dolomitic lime	**G**	Other *(specify)*: _____
G	High iron briquettes	**G**	Other *(specify)*: _____
G	Carbon	**G**	Other *(specify)*: _____
G	Fluorspar	**G**	Other *(specify)*: _____
G	Aluminum	**G**	Other *(specify)*: _____
G	Boron	**G**	Other *(specify)*: _____
G	Chromium	**G**	Other *(specify)*: _____
G	Cobalt	**G**	Other *(specify)*: _____
G	Copper	**G**	Other *(specify)*: _____
G	Lead	**G**	Other *(specify)*: _____
G	Magnesium	**G**	Other *(specify)*: _____
G	Manganese	**G**	Other *(specify)*: _____
G	Molybdenum	**G**	Other *(specify)*: _____
G	Nickel	**G**	Other *(specify)*: _____
G	Niobium (Columbium)	**G**	Other *(specify)*: _____
G	Selenium	**G**	Other *(specify)*: _____
G	Silicon	**G**	Other *(specify)*: _____
G	Sulfur	**G**	Other *(specify)*: _____
G	Tantalum	**G**	Other *(specify)*: _____
G	Titanium	**G**	Other *(specify)*: _____
G	Tungsten	**G**	Other *(specify)*: _____
G	Vanadium	**G**	Other *(specify)*: _____
G	Zirconium	**G**	Other *(specify)*: _____

HOW MANY **OPERABLE BOFS IN THIS SHOP** WERE ON SITE DURING **1997**? _____

COMPLETE A COPY OF QUESTION 2F-8 FOR **EACH** OPERABLE BOF IN THIS SHOP. NUMBER EACH COPY OF QUESTION 2F-8 IN THE SPACE PROVIDED IN THE UPPER RIGHT CORNER. NOTE: QUESTION 2F-8 IS ONE PAGE LONG.

G CBI **2F-8.**a. Provide the site designation for this BOF. The BOF designation should correspond with a response to Question 2F-2.

_____

G CBI b. What is the typical heat size of this furnace in tons? _____ tons per heat

G CBI c. What is the typical tap-to-tap time? _____ minutes

G CBI d. What type of gas cleaning system is on this furnace?

Semi-Wet. Furnace off-gases are conditioned with moisture prior to processing in electrostatic precipitators or bag houses.

Wet-Open Combustion. Excess air is admitted to the off-gas collection system, allowing carbon monoxide to combust prior to high-energy wet scrubbing for air pollution control.

Wet-Suppressed Combustion. Admission of excess air to the off-gas collection system prior to high-energy wet scrubbing for air pollution control is limited, thus minimizing combustion of carbon monoxide and the volume of gas requiring subsequent treatment.

G Semi-wet with electrostatic precipitator or baghouse
G Wet-open combustion
G Wet-suppressed combustion
G Other *(specify)*: _____

HOW MANY **OPERABLE WET AIR POLLUTION CONTROL (WAPC) SYSTEMS** WERE ON SITE AT THIS BOF SHOP DURING **1997**? A WAPC SYSTEM MAY INCLUDE MULTIPLE DEVICES SERVING THE SAME PROCESSING UNIT.

_____

COMPLETE A COPY OF QUESTION 2F-9 FOR **EACH** OPERABLE WAPC SYSTEM. NUMBER EACH COPY OF QUESTION 2F-9 IN THE SPACE PROVIDED IN THE UPPER RIGHT CORNER. NOTE: QUESTION 2F-9 IS THREE PAGES LONG. DO NOT COMPLETE THESE QUESTIONS FOR SEMI-WET AIR POLLUTION CONTROL DEVICES.

IF YOUR SITE DOES NOT HAVE WET AIR POLLUTION CONTROL ASSOCIATED WITH ANY BOFS IN THIS SHOP, **CHECK THE BOX TO THE RIGHT AND SKIP TO QUESTION 2F-10.** **G**

G CBI **2F-9.**a. Provide the designation(s) of the BOF(s) and all other operations associated with this WAPC system. BOF designation(s) should correspond with response(s) to Question 2F-2. If information for this WAPC system is already provided elsewhere in this survey, answer Question 2F-9.a., check the box to the right, and SKIP to Question 2F-10. **G**

_____

_____

G CBI b. This WAPC system controls emissions from which of the following processes? Check (✓) **ALL** that apply.

- **G** Raw material handling, preparation, and storage
- **G** Gas cleaning for primary furnace emissions
- **G** Secondary furnace emission controls
- **G** Desulfurization
- **G** Building evacuation
- **G** Other *(specify)*: _____
- **G** Other *(specify)*: _____

G CBI c. Indicate the devices in this WAPC system. Check (✓) **ALL** that apply.

- **G** Venturi scrubber
- **G** Spray chamber
- **G** Evaporation chamber
- **G** Separator
- **G** Demister
- **G** Packed tower
- **G** Other *(specify)*: _____
- **G** Other *(specify)*: _____

G CBI d. Provide the gas or air flow through the system in dry standard cubic feet per minute (dscfm).

_____ dscfm

G CBI e. Is the water recirculated or applied once-through?

- **G** Recirculated (continue)
- **G** Once-through (SKIP to Question 2F-9.l.)

G CBI f. Is any treatment and/or conditioning (e.g., chemical additions) performed in the recirculating loops at the furnaces?

- **G** Yes (continue)
- **G** No (SKIP to Question 2F-9.j.)

G CBI g. Does the treatment in the recirculating loops also treat wastewater from other processes?

- **G** No - Dedicated treatment
- **G** Yes - Treatment shared with other processes

Specify the processes: _____

COMPLETE A COPY OF QUESTION 2F-9 FOR EACH OPERABLE WAPC SYSTEM.

G CBI **2F-9.**h. **(cont.)** Check (✓) **ALL** treatment units and/or treatment processes which are included in the recirculating loops.

- **G** Clarifiers
- **G** Classifiers
- **G** Cooling towers
- **G** Earthen Lagoons
  - **G** Lined *(specify liner type)*:
    - **G** Clay
    - **G** Synthetic
    - **G** Other *(specify)*: _____
  - **G** Unlined
- **G** Oil skimmers
- **G** Scale pits
- **G** Sludge dewatering units (e.g., vacuum filter, pressure filtration, etc.)
- **G** Water filters (e.g., sand, multimedia, etc.)
- **G** Water softeners
- **G** Other *(specify)*: _____
- **G** Other *(specify)*: _____
- **G** None

G CBI i. Indicate chemical additions to the water recirculation system. Check (✓) **ALL** that apply.

- **G** Acid
- **G** Caustic (sodium hydroxide)
- **G** Corrosion inhibitor
- **G** Lime
- **G** Polymer
- **G** Scale inhibitor
- **G** Surfactant
- **G** Other *(specify)*: _____
- **G** Other *(specify)*: _____
- **G** None

G CBI j. Provide the design flow of water through the recirculating loop. _____ gpm

G CBI k. Provide the average recirculation rate of water through the WAPC system and period of operation.

_____ gpm _____ hours per day _____ days per year

G CBI l. Provide the average rate at which new water is added to the system (for once-through systems, provide the influent flow rate; for recirculating systems, provide the makeup flow rate).

_____ gallons per day _____ days per year

COMPLETE A COPY OF QUESTION 2F-9 FOR EACH OPERABLE WAPC SYSTEM.

G CBI **2F-9.**m. **(cont.)** Indicate **ALL** sources for water addition. Provide the percentage of water contributed by each source. The percentages should add to 100 percent.

- **G** Plant service water (city, well, or surface water which has not been used elsewhere on site) _____ %
- **G** Noncontact cooling water *(specify manufacturing process(es))*: _____ _____ %
- **G** Treated process wastewater *(specify manufacturing process(es))*: _____ _____ %
- **G** Untreated process wastewater *(specify manufacturing process(es))*: _____ _____ %
- **G** Treated storm water *(specify manufacturing process(es) or other collection area(s))*: _____ _____ %
- **G** Untreated storm water *(specify manufacturing process(es) or other collection area(s))*: _____ _____ %
- **G** Other *(specify)*: _____ _____ %

Total 100 %

G CBI n. Provide the average discharge rate from the system and period of discharge (for recirculating systems, provide the blowdown rate).

_____ gpm _____ hours per day _____ days per year

OR: _____ gallons per day _____ days per year

G CBI o. Indicate the destination of wastewater discharge or blowdown. Check (✓) **ALL** that apply.

- **G** Discharge to treatment *(specify treatment system)*: _____
- **G** Discharge without treatment by pipeline, sewer, or other conveyance to surface water *(specify outfall number)*: _____
- **G** Discharge without treatment by pipeline, sewer, or other conveyance to POTW *(specify designation for permit monitoring location)*: _____
- **G** Discharge without treatment by pipeline, sewer, or other conveyance to PrOTW *(specify designation for permit monitoring location if applicable)*: _____
- **G** Zero discharge or alternative disposal methods:
  - **G** Deep-well injection
  - **G** Evaporation *(specify method)*: _____
  - **G** Percolation pond
  - **G** Spray irrigation
  - **G** Contract hauled
    (specify disposal rate, including transportation): $ _____ per gallon
    (specify destination/disposal method): _____
  - **G** Incineration
  - **G** Other *(specify)*: _____

HOW MANY **OPERABLE PRIMARY FURNACE EMISSIONS SEMI-WET AIR POLLUTION CONTROL (SWAPC) SYSTEMS** WERE ON SITE AT THIS BOF SHOP DURING **1997**? A SWAPC SYSTEM MAY INCLUDE MULTIPLE DEVICES SERVING THE SAME PROCESSING UNIT. _____

COMPLETE A COPY OF QUESTION 2F-10 FOR **EACH** OPERABLE SWAPC SYSTEM. NUMBER EACH COPY OF QUESTION 2F-10 IN THE SPACE PROVIDED IN THE UPPER RIGHT CORNER. NOTE: QUESTION 2F-10 IS THREE PAGES LONG.

IF YOUR SITE DOES NOT HAVE SEMI-WET AIR POLLUTION CONTROL ASSOCIATED WITH ANY BOFS IN THIS SHOP, **CHECK THE BOX TO THE RIGHT AND SKIP TO QUESTION 2F-11.** **G**

G CBI **2F-10.**a. Provide the designation(s) of the BOF(s) associated with this SWAPC system. BOF designation(s) should correspond with response(s) to Question 2F-2.

_____

_____

G CBI b. Provide the gas or air flow through the system in dry standard cubic feet per minute (dscfm).

_____ dscfm

G CBI c. How much water is applied to the gas stream for conditioning upstream of the air pollution control device?

_____ gallons per ton of steel produced

G CBI d. Is an excess of water applied (i.e., more water is applied than can be absorbed by the gas stream)?

G Yes

G No

G CBI e. Indicate why water is applied to the gas stream.

G To flush solids upstream of the air pollution control devices

G Other *(specify)*: _____

G CBI f. Is the system operated in a zero-discharge mode on a sustained basis (i.e., no water is discharged from this system)?

G Yes

G No

G CBI g. Is the water recirculated or applied once-through?

G Recirculated (continue)

G Once-through (SKIP to Question 2F-10.n.)

G CBI h. Is any treatment and/or conditioning (e.g., chemical additions) performed in the recirculating loop?

G Yes (continue)

G No (SKIP to Question 2F-10.l.)

COMPLETE A COPY OF QUESTION 2F-10 FOR EACH OPERABLE SWAPC SYSTEM.

G CBI **2F-10.**i. **(cont.)** Does the treatment in the recirculating loop also treat wastewater from other processes?

- **G** No - Dedicated treatment
- **G** Yes - Treatment shared with other processes

Specify the processes: _____

G CBI j. Check (✓) **ALL** treatment units and/or treatment processes which are included in the recirculating loop.

- **G** Clarifiers
- **G** Classifiers
- **G** Cooling towers
- **G** Earthen Lagoons
  - **G** Lined *(specify liner type)*:
    - **G** Clay
    - **G** Synthetic
    - **G** Other *(specify)*: _____
  - **G** Unlined
- **G** Oil skimmers
- **G** Scale pits
- **G** Sludge dewatering units (e.g., vacuum filter, pressure filtration, etc.)
- **G** Water filters (e.g., sand, multimedia, etc.)
- **G** Water softeners
- **G** Other *(specify)*: _____
- **G** Other *(specify)*: _____
- **G** None

G CBI k. Indicate chemical additions to the water recirculation system. Check (✓) **ALL** that apply.

- **G** Acid
- **G** Caustic (sodium hydroxide)
- **G** Corrosion inhibitor
- **G** Lime
- **G** Polymer
- **G** Scale inhibitor
- **G** Surfactant
- **G** Other *(specify)*: _____
- **G** Other *(specify)*: _____
- **G** None

G CBI l. Provide the design flow of water through the recirculating loop. _____ gpm

G CBI m. Provide the average recirculation rate of water through the WAPC system and period of operation.

_____ gpm _____ hours per day _____ days per year

G CBI n. Provide the average rate at which new water is added to the system (for once-through systems, provide the influent flow rate; for recirculating systems, provide the makeup flow rate).

_____ gallons per day _____ days per year

COMPLETE A COPY OF QUESTION 2F-10 FOR EACH OPERABLE SWAPC SYSTEM.

G CBI **2F-10.**o. **(cont.)** Indicate **ALL** sources for water addition. Provide the percentage of water contributed by each source. The percentages should add to 100 percent.

- **G** Plant service water (city, well, or surface water which has not been used elsewhere on site) _____ %
- **G** Noncontact cooling water *(specify manufacturing process(es))*: _____ _____ %
- **G** Treated process wastewater *(specify manufacturing process(es))*: _____ _____ %
- **G** Untreated process wastewater *(specify manufacturing process(es))*: _____ _____ %
- **G** Treated storm water *(specify manufacturing process(es) or other collection area(s))*: _____ _____ %
- **G** Untreated storm water *(specify manufacturing process(es) or other collection area(s))*: _____ _____ %
- **G** Other *(specify)*: _____ _____ %

Total 100 %

G CBI p. Provide the average discharge rate from the system and period of discharge (for recirculating systems, provide the blowdown rate).

_____ gpm _____ hours per day _____ days per year

OR: _____ gallons per day _____ days per year

G CBI q. Indicate the destination of wastewater discharge or blowdown. Check (✓) **ALL** that apply.

- **G** Discharge to treatment *(specify treatment system)*: _____
- **G** Discharge without treatment by pipeline, sewer, or other conveyance to surface water *(specify outfall number)*: _____
- **G** Discharge without treatment by pipeline, sewer, or other conveyance to POTW *(specify designation for permit monitoring location)*: _____
- **G** Discharge without treatment by pipeline, sewer, or other conveyance to PrOTW *(specify designation for permit monitoring location if applicable)*: _____
- **G** Zero discharge or alternative disposal methods:
  - **G** Deep-well injection
  - **G** Evaporation *(specify method)*: _____
  - **G** Percolation pond
  - **G** Spray irrigation
  - **G** Contract hauled
    (specify disposal rate, including transportation): $ _____ per gallon
    (specify destination/disposal method): _____
  - **G** Incineration
  - **G** Other *(specify)*: _____

G CBI **2F-11.**a. Are any dry air pollution control (DAPC) systems associated with any BOFs in this shop?

G Yes (continue)

G No (SKIP to Question 2F-12)

G CBI b. Indicate the process associated with DAPC systems in the BOF shop and the furnace designation(s) associated with each process (designation(s) should correspond with response(s) to Question 2F-2). Check (✓) **ALL** that apply. For each process checked, indicate the type of DAPC system.

Process	BOF Designation	Type of DAPC System
G Raw material handling, preparation, and storage associated with the BOFs		**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:
G Gas cleaning for primary furnace emissions		**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:
G Secondary furnace emissions controls		**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:
G Desulfurization		**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:
G Slag handling		**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:
G Building evacuation		**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:
G Other *(specify)*:		**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:
G Other *(specify)*:		**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:
G Other *(specify)*:		**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:

G CBI **2F-12.**a. Is any water used for quenching or cooling of slag produced at this BOF shop?

G Yes (continue)

G No (SKIP to Question 2F-13)

G CBI b. Indicate the location of BOF slag quenching operations. Check (✓) **ALL** that apply.

G At or near the BOF shop

G Remotely located from the BOF shop

G Both

G CBI c. What is the typical average monthly volume of water used for slag quenching or cooling? Provide a best engineering estimate if an actual value is not available.

_____ gallons per month

G CBI d. What was the typical average monthly amount of BOF slag produced in **1997**? Provide a best engineering estimate if an actual value is not available.

_____ tons per month

G CBI e. Indicate **ALL** sources of water used for slag quenching or cooling.

G Plant service water (city, well, or surface water which has not been used elsewhere on site)

G Noncontact cooling water *(specify manufacturing process(es))*:

_____

G Treated process wastewater *(specify manufacturing process(es))*:

_____

G Untreated process wastewater *(specify manufacturing process(es))*:

_____

G Treated storm water *(specify manufacturing process(es) or other collection area(s))*:

_____

G Untreated storm water *(specify manufacturing process(es) or other collection area(s))*:

_____

G Other *(specify)*: _____

STOP

EXCLUDING AIR POLLUTION CONTROL SYSTEMS, VACUUM DEGASSERS, CASTERS, AND STORM WATER, HOW MANY OTHER WASTEWATER SOURCES FROM BOF STEELMAKING OPERATIONS ARE PRESENT? _____

COMPLETE A COPY OF QUESTION 2F-13 FOR **EACH** BOF WASTEWATER SOURCE. NUMBER EACH COPY OF QUESTION 2F-13 IN THE SPACE PROVIDED IN THE UPPER RIGHT CORNER. NOTE: QUESTION 2F-13 IS TWO PAGES LONG.

IF YOUR SITE HAS NO BOF SOURCES WHICH CONTRIBUTE PROCESS WASTEWATER NOT ASSOCIATED WITH AIR POLLUTION CONTROL, VACUUM DEGASSERS, CASTERS, OR STORM WATER, **CHECK THE BOX TO THE RIGHT AND SKIP TO QUESTION 2F-14.** **G**

2F-13. Provide information for this BOF shop and related on-site wastewater generating sources.

G CBI a. Indicate the source of process wastewater **NOT** associated with wet or semi-wet air pollution control, vacuum degassers, casters, or storm water. If there is more than one source at this shop, complete a copy of this question for **EACH** BOF source.

- **G** Raw material preparation and storage
- **G** Slag quenching
- **G** Equipment cleaning and washdown water
- **G** Other *(specify)*: _____

G CBI b. Provide a list of chemicals or pollutants known or believed to be present in this source of process wastewater. If a list is readily available, attach it to the survey with this question number and your site ID written on the upper right corner. If a chemical or pollutant originates from a commercial cleaning solution (e.g., solutions used to clean and wash equipment), provide the vendor name of the cleaning product and product code, if known.

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

G CBI c. Provide the wastewater flow rate and period of discharge associated with the source checked above.

_____ gpm _____ hours per day _____ days per year

OR: _____ gallons per day _____ days per year

COMPLETE A COPY OF QUESTION 2F-13 FOR EACH BASIC OXYGEN FURNACE SOURCE GENERATING PROCESS WASTEWATER NOT ASSOCIATED WITH AIR POLLUTION CONTROL, VACUUM DEGASSERS, CASTERS, OR STORM WATER.

G CBI **2F-13.**d. **(cont.)** Indicate the destination of this wastewater stream. Check (✓) **ALL** that apply.

- **G** Discharge to treatment *(specify treatment system)*: _____
- **G** Discharge without treatment by pipeline, sewer, or other conveyance to surface water *(specify outfall number)*: _____
- **G** Discharge without treatment by pipeline, sewer, or other conveyance to POTW *(specify designation for permit monitoring location)*:

  _____
- **G** Discharge without treatment by pipeline, sewer, or other conveyance to PrOTW *(specify designation for permit monitoring location if applicable)*: _____
- **G** Zero discharge or alternative disposal methods:
  - **G** Deep-well injection
  - **G** Evaporation *(specify method)*: _____
  - **G** Percolation pond
  - **G** Spray irrigation
  - **G** Contract hauled
    (specify disposal rate, including transportation): $ _____ per gallon
    (specify destination/disposal method): _____
  - **G** Incineration
  - **G** Other *(specify)*: _____

G CBI **2F-14.** Provide information on any major process modifications and/or shut downs which have occurred at this BOF shop since 1993. Provide BOF shop and furnace designations in the description. Designation(s) should correspond with response(s) to Question 2F-2.

Shut Down or Modification?	Date	Description

G CBI **2F-15.** Provide information on any publicly announced process modifications and/or shut downs planned to occur during the next five years (1998 to 2002) at this BOF shop. Provide BOF shop and furnace designations in the description. Designation(s) should correspond with response(s) to Question 2F-2.

Shut Down or Modification?	Anticipated Date	Description

G CBI **2F-16.** Indicate **ALL** pollution prevention (waste reduction) or management practices implemented by your site for this BOF shop and describe the practice as it is implemented. Describe all processes where by-products and wastes are recovered for reuse or sold as a raw material feedstock. Discuss the percent recovered. Provide BOF shop and furnace designations in the description. Designation(s) should correspond with response(s) to Question 2F-2.

Management Practices	Description of Practice
G Management of spillage and losses from raw material handling operations associated with this BOF shop	
G Management of runoff from raw material storage piles associated with this BOF shop	
G Management of fugitive discharges of process wastewaters and materials to BOF shop noncontact cooling water (NCCW) systems	
G Surveillance and corrective action programs for oil discharges from large NCCW flows associated with this BOF shop	
G Collection and treatment and/or disposal of storm water from any areas associated with the BOFs (specify manufacturing processes or other collection areas in the description)	
G Control of runoff/leachate and ground water contamination from BOF slag processing adjacent at the furnaces	
G Control of runoff from BOF slag processing remote from the furnace	
G Collection and treatment and/or disposal of landfill leachate from any landfills associated with BOF shop wastes	
G Collection and treatment and/or disposal of contaminated ground waters associated with this BOF shop	
G Other *(specify)*:	
G Other *(specify)*:	

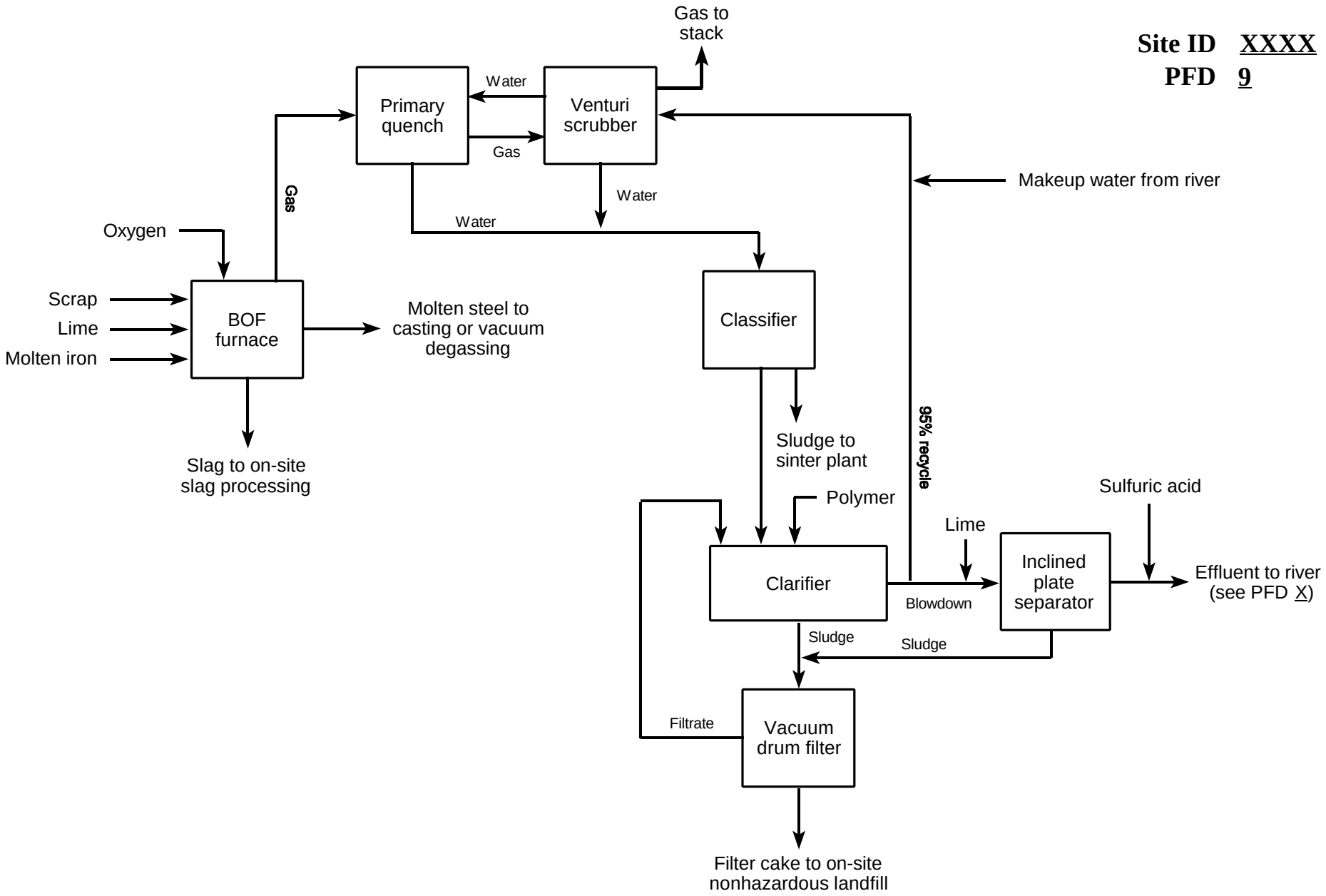
G CBI **2F-17.** Attach a process flow diagram (PFD) that shows the BOF steelmaking process and the water use associated with the process. You are **NOT** required to create a new PFD if an existing diagram will suffice. Number the diagram in the upper right corner, and include your site ID number (as shown on the cover page of Part A). Specific instructions for including the PFD, along with an example diagram, are provided below. **Flow rates are NOT required on the diagrams.**

Provide the PFD number assigned to the BOF steelmaking PFD. **If the process is already shown on a PFD provided elsewhere in this survey, provide the PFD number and review the following list for completeness.** If you need assistance, call the Technical Information Help Line at (800) 357-7075.

BOF steelmaking PFD-_____

Process Flow Diagram Checklist

Be sure...	✓
All BOF steelmaking operations are included. Include those operations which do not generate process wastewater.	**G**
All air pollution control systems are included. Label each system as being either wet, semi-wet, or dry. Water streams for all wet or semi-wet air pollution control systems must be shown, including all recycle streams and all treatment processes within recycle loops.	**G**
Any recycle or reuse of process wastewater or other waters is indicated clearly on the diagram.	**G**
Any in-process wastewater treatment or reuse technologies are indicated. Show and label all treatment units and all recycle loops.	**G**
Significant losses of water (e.g., evaporation) are shown.	**G**
All materials entering each operation and all products and wastes exiting each operation are identified. Wastes include wastewater, sludges, baghouse dust, and point-source air emissions. Noncontact cooling water systems which do not contain process wastewater and do not discharge to process wastewater systems do not need to be included.	**G**
All process wastewater streams are identified. When sources and destinations of process wastewater are not shown on the diagram (i.e., the stream is entering from or exiting to a location not shown on the diagram), describe the source or destination (e.g., "from river" or "to wastewater treatment") and add the PFD number, when appropriate, where the stream's previous or next location can be seen.	**G**
The PFD number and your site ID number are written on the diagram.	**G**
If you believe that the diagram should be treated as confidential, stamp it "Confidential" or write "Confidential" or "CBI" across the top. If any diagram is not marked "Confidential", it will be considered nonconfidential under 40 CFR Part 2, Subpart B.	**G**



Basic Oxygen Furnace
Example Process Flow Diagram

COMMENTS FOR SECTION 2F: BASIC OXYGEN FURNACE STEELMAKING

Cross reference your comments by question number and indicate the confidential status of your comment by checking (✓) the box in the column titled "CBI" (Confidential Business Information). If you need additional space, photocopy this page before writing on it and number each copy in the space provided in the upper right corner.

Question Number	CBI	Comment
	G	
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SECTION 2G. ELECTRIC ARC FURNACE STEELMAKING

TECHNICAL INFORMATION HELP LINE: (800) 357-7075

✓

IS ELECTRIC ARC FURNACE (EAF) STEELMAKING PERFORMED AT THIS SITE?

G YES (CONTINUE)

G NO (SKIP TO SECTION 2H)

THROUGHOUT THIS SECTION, YOU WILL BE REQUIRED TO PROVIDE INFORMATION FOR **ALL** OPERABLE UNITS AND WATER SYSTEMS RELATED TO ELECTRIC ARC FURNACE STEELMAKING WHICH WERE ON SITE DURING 1997, INCLUDING UNITS AND WATER SYSTEMS WHICH MAY HAVE BEEN IDLE FOR AN EXTENDED PERIOD OF TIME DUE TO CIRCUMSTANCES SUCH AS MARKET CONDITIONS, MAJOR REBUILDS, OR LABOR DISPUTES. IF AN OPERABLE UNIT OR WATER SYSTEM WAS NOT IN OPERATION DURING 1997, SUBSTITUTE THE MOST RECENT CALENDAR YEAR WHEN SUCH CIRCUMSTANCES DID NOT EXIST. NOTE THE YEAR OF OPERATION AND THE CIRCUMSTANCES IN THE COMMENTS AT THE END OF THIS SECTION, AND PROVIDE DATA FROM THAT CALENDAR YEAR.

G CBI **2G-1.** How many operable EAFs were on site during **1997**? _____

G CBI **2G-2.** An EAF shop consists of a building or structure containing one or more electric furnaces and ancillary processes and equipment (e.g., scrap and/or DRI charging; lime, carbon, alloy and oxygen addition; furnace tapping; deslagging and slag handling; and primary and secondary air emission control equipment). This definition of an EAF shop is used for this survey. In the table below, provide a list of the operable EAF shops that were on site during **1997**. Use the site terminology or site designation for each EAF shop. Fill in each column with the site designation for each furnace at each shop.

EAF Shop Designation:			
Individual Furnace Designations:			

HOW MANY **OPERABLE EAF SHOPS** WERE ON SITE DURING **1997**? _____

COMPLETE A COPY OF THE REMAINDER OF THIS SECTION (QUESTIONS 2G-3 THROUGH 2G-17, AND A COMMENTS PAGE IF NECESSARY) FOR **EACH** OPERABLE EAF SHOP. NUMBER EACH COPY OF QUESTIONS 2G-3 THROUGH 2G-17 IN THE SPACE PROVIDED AT THE TOP OF EACH PAGE.

G CBI **2G-3.** Provide the designation of this EAF shop. The EAF shop designation should correspond with a response to Question 2G-2. _____

_____

G CBI **2G-4.** What year was steel first produced at this EAF shop? _____

G CBI **2G-5.**a. What is the total rated capacity of raw steel for this shop in tons per year?

_____ tons/year (to three significant figures, e.g., 753,000 tons/year)

G CBI b. What is the annual number of heats used to determine the total rated capacity?

_____ heats/year

G CBI **2G-6.** Provide annual production data for this EAF shop for each of the five calendar years 1993 through 1997.

Year	EAF Steel Produced (tons/year)
1993	
1994	
1995	
1996	
1997	

G CBI **2G-7.** Check (✓) **ALL** raw materials and alloying elements which were charged to the EAFs in this shop during **1997**. If you have a previously prepared list of raw materials and alloying elements charged to the EAFs in this shop, attach it to the survey, write your site ID (shown on the cover page of Part A) and this question number on the upper right corner of the list, check (✓) the box to the right, and SKIP to Question 2G-8. **G**

G Steel scrap	**G** Other *(specify)*: _____
G Iron pigs	**G** Other *(specify)*: _____
G Molten iron	**G** Other *(specify)*: _____
G Direct-reduced iron	**G** Other *(specify)*: _____
G High iron briquettes	**G** Other *(specify)*: _____
G Lime	**G** Other *(specify)*: _____
G Dolomite	**G** Other *(specify)*: _____
G Carbon	**G** Other *(specify)*: _____
G Aluminum	**G** Other *(specify)*: _____
G Boron	**G** Other *(specify)*: _____
G Chromium	**G** Other *(specify)*: _____
G Cobalt	**G** Other *(specify)*: _____
G Copper	**G** Other *(specify)*: _____
G Lead	**G** Other *(specify)*: _____
G Magnesium	**G** Other *(specify)*: _____
G Manganese	**G** Other *(specify)*: _____
G Molybdenum	**G** Other *(specify)*: _____
G Nickel	**G** Other *(specify)*: _____
G Niobium (Columbium)	**G** Other *(specify)*: _____
G Selenium	**G** Other *(specify)*: _____
G Silicon	**G** Other *(specify)*: _____
G Sulfur	**G** Other *(specify)*: _____
G Tantalum	**G** Other *(specify)*: _____
G Titanium	**G** Other *(specify)*: _____
G Tungsten	**G** Other *(specify)*: _____
G Vanadium	**G** Other *(specify)*: _____
G Zirconium	**G** Other *(specify)*: _____

HOW MANY **OPERABLE EAFS IN THIS SHOP** WERE ON SITE DURING **1997**? _____

COMPLETE A COPY OF QUESTION 2G-8 FOR **EACH** OPERABLE EAF IN THIS SHOP. NUMBER EACH COPY OF QUESTION 2G-8 IN THE SPACE PROVIDED IN THE UPPER RIGHT CORNER. NOTE: QUESTION 2G-8 IS ONE PAGE LONG.

G CBI **2G-8.**a. Provide the site designation for this EAF. The EAF designation should correspond with a response to Question 2G-2. _____

G CBI b. What is the typical heat size of this furnace in tons? _____ tons per heat

G CBI c. What is the typical tap-to-tap time? _____ minutes

G CBI d. What type of air cleaning system is on this furnace?

Dry. Furnace off-gases are cleaned with no water addition to the gas cleaning system.

Semi-Wet. Furnace off-gases are conditioned with moisture prior to processing in electrostatic precipitators or baghouses. This includes addition of water ahead of the air pollution control device(s) for gas temperature control (e.g., peak temperature shaving).

Wet. Furnace off-gases are cleaned with a wet scrubbing system for air pollution control.

G Dry
G Semi-wet
G Wet
G Other *(specify)*: _____

HOW MANY **OPERABLE WET AIR POLLUTION CONTROL (WAPC) SYSTEMS** WERE ON SITE AT THIS EAF SHOP DURING **1997**? A WAPC SYSTEM MAY INCLUDE MULTIPLE DEVICES SERVING THE SAME PROCESSING UNIT.

_____

COMPLETE A COPY OF QUESTION 2G-9 FOR **EACH** OPERABLE WAPC SYSTEM. NUMBER EACH COPY OF QUESTION 2G-9 IN THE SPACE PROVIDED IN THE UPPER RIGHT CORNER. NOTE: QUESTION 2G-9 IS THREE PAGES LONG. DO NOT COMPLETE THESE QUESTIONS FOR SEMI-WET AIR POLLUTION CONTROL DEVICES.

IF YOUR SITE DOES NOT HAVE WET AIR POLLUTION CONTROL ASSOCIATED WITH ANY EAFS IN THIS SHOP, **CHECK THE BOX TO THE RIGHT AND SKIP TO QUESTION 2G-10.** **G**

G CBI **2G-9.**a. Provide the designation(s) of the EAF(s) and all other operations associated with this WAPC system. EAF designation(s) should correspond with response(s) to Question 2G-2. If information for this WAPC system is already provided elsewhere in this survey, answer Question 2G-9.a., check the box to the right, and SKIP to Question 2G-10. **G**

_____

_____

G CBI b. This WAPC system controls emissions from which of the following processes? Check (✓) **ALL** that apply.

- **G** Raw material, handling, preparation, and storage
- **G** Gas cleaning for primary furnace emission
- **G** Secondary furnace emission controls
- **G** Building evacuation
- **G** Other *(specify)*: _____

G CBI c. Indicate the devices in this WAPC system. Check (✓) **ALL** that apply.

- **G** Venturi scrubber
- **G** Spray chamber
- **G** Evaporation chamber
- **G** Separator
- **G** Demister
- **G** Packed tower
- **G** Other *(specify)*: _____
- **G** Other *(specify)*: _____

G CBI d. Provide the gas or air flow through the system in dry standard cubic feet per minute (dscfm).

_____ dscfm

G CBI e. Is the water recirculated or applied once-through?

- **G** Recirculated (continue)
- **G** Once-through (SKIP to Question 2G-9.l.)

G CBI f. Is any treatment and/or conditioning (e.g., chemical additions) performed in the recirculating loop?

- **G** Yes (continue)
- **G** No (SKIP to Question 2G-9.j.)

G CBI g. Does the treatment in the recirculating loop also treat wastewater from other processes?

- **G** No - Dedicated treatment
- **G** Yes - Treatment shared with other processes

Specify the processes: _____

COMPLETE A COPY OF QUESTION 2G-9 FOR EACH OPERABLE WAPC SYSTEM.

G CBI **2G-9.**h. **(cont.)** Check (✓) **ALL** treatment units and/or treatment processes which are included in the recirculating loop.

- **G** Clarifiers
- **G** Classifiers
- **G** Cooling towers
- **G** Earthen Lagoons
  - **G** Lined *(specify liner type)*:
    - **G** Clay
    - **G** Synthetic
    - **G** Other *(specify)*: _____
  - **G** Unlined
- **G** Oil skimmers
- **G** Scale pits
- **G** Sludge dewatering units (e.g., vacuum filter, pressure filtration, etc.)
- **G** Water filters (e.g., sand, multimedia, etc.)
- **G** Water softeners
- **G** Other *(specify)*: _____
- **G** Other *(specify)*: _____
- **G** None

G CBI i. Indicate chemical additions to the water recirculation system. Check (✓) **ALL** that apply.

- **G** Acid
- **G** Caustic (sodium hydroxide)
- **G** Corrosion inhibitor
- **G** Lime
- **G** Polymer
- **G** Scale inhibitor
- **G** Surfactant
- **G** Other *(specify)*: _____
- **G** Other *(specify)*: _____
- **G** None

G CBI j. Provide the design flow of water through the recirculating loop. _____ gpm

G CBI k. Provide the average recirculation rate of water through the WAPC system and period of operation.

_____ gpm _____ hours per day _____ days per year

G CBI l. Provide the average rate at which new water is added to the system (for once-through systems, provide the influent flow rate; for recirculating systems, provide the makeup flow rate).

_____ gallons per day _____ days per year

COMPLETE A COPY OF QUESTION 2G-9 FOR EACH OPERABLE WAPC SYSTEM.

G CBI **2G-9.**m. **(cont.)** Indicate **ALL** sources for water addition. Provide the percentage of water contributed by each source. The percentages should add to 100 percent.

- **G** Plant service water (city, well, or surface water which has not been used elsewhere on site) _____ %
- **G** Noncontact cooling water *(specify manufacturing process(es))*: _____ _____ %
- **G** Treated process wastewater *(specify manufacturing process(es))*: _____ _____ %
- **G** Untreated process wastewater *(specify manufacturing process(es))*: _____ _____ %
- **G** Treated storm water *(specify manufacturing process(es) or other collection area(s))*: _____ _____ %
- **G** Untreated storm water *(specify manufacturing process(es) or other collection area(s))*: _____ _____ %
- **G** Other *(specify)*: _____ _____ %

Total 100 %

G CBI n. Provide the average discharge rate from the system and period of discharge (for recirculating systems, provide the blowdown rate).

_____ gpm _____ hours per day _____ days per year

OR: _____ gallons per day _____ days per year

G CBI o. Indicate the destination of wastewater discharge or blowdown. Check (✓) **ALL** that apply.

- **G** Discharge to treatment *(specify treatment system)*: _____
- **G** Discharge without treatment by pipeline, sewer, or other conveyance to surface water *(specify outfall number)*: _____
- **G** Discharge without treatment by pipeline, sewer, or other conveyance to POTW *(specify designation for permit monitoring location)*: _____
- **G** Discharge without treatment by pipeline, sewer, or other conveyance to PrOTW *(specify designation for permit monitoring location if applicable)*: _____
- **G** Zero discharge or alternative disposal methods:
  - **G** Deep-well injection
  - **G** Evaporation *(specify method)*: _____
  - **G** Percolation pond
  - **G** Spray irrigation
  - **G** Contract hauled
    (specify disposal rate, including transportation): $ _____ per gallon
    (specify destination/disposal method): _____
  - **G** Incineration
  - **G** Other *(specify)*: _____

HOW MANY **OPERABLE PRIMARY FURNACE EMISSIONS SEMI-WET AIR POLLUTION CONTROL (SWAPC) SYSTEMS** WERE ON SITE AT THIS EAF SHOP DURING 1997? A SWAPC SYSTEM MAY INCLUDE MULTIPLE DEVICES SERVING THE SAME PROCESSING UNIT. _____

COMPLETE A COPY OF QUESTION 2G-10 FOR **EACH** OPERABLE SWAPC SYSTEM. NUMBER EACH COPY OF QUESTION 2G-10 IN THE SPACE PROVIDED IN THE UPPER RIGHT CORNER. NOTE: QUESTION 2G-10 IS THREE PAGES LONG.

IF YOUR SITE DOES NOT HAVE SEMI-WET AIR POLLUTION CONTROL ASSOCIATED WITH ANY EAFS IN THIS SHOP, **CHECK THE BOX TO THE RIGHT AND SKIP TO QUESTION 2G-11.** **G**

G CBI **2G-10.**a. Provide the designation(s) of the EAF(s) associated with this SWAPC system. EAF designation(s) should correspond with response(s) to Question 2G-2.

_____

_____

G CBI b. Provide the gas or air flow through the system in dry standard cubic feet per minute (dscfm).

_____ dscfm

G CBI c. How much water is applied to the gas stream for conditioning upstream of the air pollution control system?

_____ gallons per ton of steel produced

G CBI d. Is an excess of water applied (i.e., more water is applied than can be absorbed by the gas stream)?

G Yes
G No

G CBI e. Indicate why water is applied to the gas stream.

G Temperature control
G Other *(specify)*: _____

G CBI f. Is the system operated in a zero-discharge mode on a sustained basis (i.e., no water is discharged from this system)?

G Yes
G No

G CBI g. Is the water recirculated or applied once-through?

G Recirculated (continue)
G Once-through (SKIP to Question 2G-10.n.)

G CBI h. Is any treatment and/or conditioning (e.g., chemical additions) performed in the recirculating loop?

G Yes (continue)
G No (SKIP to Question 2G-10.l.)

COMPLETE A COPY OF QUESTION 2G-10 FOR EACH OPERABLE SWAPC SYSTEM.

G CBI **2G-10.**i. **(cont.)** Does the treatment in the recirculating loop also treat wastewater from other processes?

- **G** No - Dedicated treatment
- **G** Yes - Treatment shared with other processes

Specify the processes: _____

G CBI j. Check (✓) **ALL** treatment units and/or treatment processes which are included in the recirculating loop.

- **G** Clarifiers
- **G** Classifiers
- **G** Cooling towers
- **G** Earthen Lagoons
  - **G** Lined *(specify liner type)*
    - **G** Clay
    - **G** Synthetic
    - **G** Other *(specify)*: _____
  - **G** Unlined
- **G** Oil skimmers
- **G** Scale pits
- **G** Sludge dewatering units (e.g., vacuum filter, pressure filtration, etc.)
- **G** Water filters (e.g., sand, multimedia, etc.)
- **G** Water softeners
- **G** Other *(specify)*: _____
- **G** Other *(specify)*: _____
- **G** None

G CBI k. Indicate chemical additions to the water recirculation system. Check (✓) **ALL** that apply.

- **G** Acid
- **G** Caustic (sodium hydroxide)
- **G** Corrosion inhibitor
- **G** Lime
- **G** Polymer
- **G** Scale inhibitor
- **G** Surfactant
- **G** Other *(specify)*: _____
- **G** Other *(specify)*: _____
- **G** None

G CBI l. Provide the design flow of water through the recirculating loop. _____ gpm

G CBI m. Provide the average recirculation rate of water through the WAPC system and period of operation.

_____ gpm _____ hours per day _____ days per year

G CBI n. Provide the average rate at which new water is added to the system (for once-through systems, provide the influent flow rate; for recirculating systems, provide the makeup flow rate).

_____ gallons per day _____ days per year

COMPLETE A COPY OF QUESTION 2G-10 FOR EACH OPERABLE SWAPC SYSTEM.

G CBI **2G-10.**o. **(cont.)** Indicate **ALL** sources for water addition. Provide the percentage of water contributed by each source. The percentages should add to 100 percent.

- **G** Plant service water (city, well, or surface water which has not been used elsewhere on site) _____ %
- **G** Noncontact cooling water *(specify manufacturing process(es))*: _____ _____ %
- **G** Treated process wastewater *(specify manufacturing process(es))*: _____ _____ %
- **G** Untreated process wastewater *(specify manufacturing process(es))*: _____ _____ %
- **G** Treated storm water *(specify manufacturing process(es) or other collection area(s))*: _____ _____ %
- **G** Untreated storm water *(specify manufacturing process(es) or other collection area(s))*: _____ _____ %
- **G** Other *(specify)*: _____ _____ %

Total 100 %

G CBI p. Provide the average discharge rate from the system and period of discharge (for recirculating systems, provide the blowdown rate).

_____ gpm _____ hours per day _____ days per year

OR: _____ gallons per day _____ days per year

G CBI q. Indicate the destination of wastewater discharge or blowdown. Check (✓) **ALL** that apply.

- **G** Discharge to treatment *(specify treatment system)*: _____
- **G** Discharge without treatment by pipeline, sewer, or other conveyance to surface water *(specify outfall number)*: _____
- **G** Discharge without treatment by pipeline, sewer, or other conveyance to POTW *(specify designation for permit monitoring location)*: _____
- **G** Discharge without treatment by pipeline, sewer, or other conveyance to PrOTW *(specify designation for permit monitoring location if applicable)*: _____
- **G** Zero discharge or alternative disposal methods:
  - **G** Deep-well injection
  - **G** Evaporation *(specify method)*: _____
  - **G** Percolation pond
  - **G** Spray irrigation
  - **G** Contract hauled
    (specify disposal rate, including transportation): $ _____ per gallon
    (specify destination/disposal method): _____
  - **G** Incineration
  - **G** Other *(specify)*: _____

G CBI **2G-11.**a. Are any dry air pollution control (DAPC) systems associated with any EAFs in this shop?

G Yes (continue)

G No (SKIP to Question 2G-12)

G CBI b. Indicate the process associated with DAPC systems in this EAF shop and the furnace designation(s) associated with each process (designation(s) should correspond with response(s) to Question 2G-2). Check (✓) **ALL** that apply. For each process checked, indicate the type of DAPC system.

Process	EAF Designation	Type of DAPC System
G Raw material handling, preparation, and storage associated with the EAFs		**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:
G Gas cleaning for primary furnace emission		**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:
G Secondary furnace emissions controls		**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:
G Building evacuation		**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:
G Other *(specify)*:		**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:
G Other *(specify)*:		**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:
G Other *(specify)*:		**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:

G CBI **2G-12.**a. Is any water used for quenching or cooling of slag produced at this EAF shop?

G Yes (continue)

G No (SKIP to Question 2G-13)

G CBI b. Indicate the location of EAF slag quenching operations. Check (✓) **ALL** that apply.

G At or near the EAF shop

G Remotely located from the EAF shop

G Both

G CBI c. What is the typical average monthly volume of water used for slag quenching or cooling? Provide a best engineering estimate if an actual value is not available.

_____ gallons per month

G CBI d. What was the typical average monthly amount of EAF slag produced in **1997**? Provide a best engineering estimate if an actual value is not available.

_____ tons per month

G CBI e. Indicate **ALL** sources of water used for slag quenching or cooling.

G Plant service water (city, well, or surface water which has not been used elsewhere on site)

G Noncontact cooling water *(specify manufacturing process(es))*:

_____

G Treated process wastewater *(specify manufacturing process(es))*:

_____

G Untreated process wastewater *(specify manufacturing process(es))*:

_____

G Treated storm water *(specify manufacturing process(es) or collection area(s))*:

_____

G Untreated storm water *(specify manufacturing process(es) or collection area(s))*:

_____

G Other *(specify)*: _____

STOP

EXCLUDING AIR POLLUTION CONTROL SYSTEMS, VACUUM DEGASSERS, CASTERS, AND STORM WATER, HOW MANY OTHER WASTEWATER SOURCES FROM EAF STEELMAKING OPERATIONS ARE PRESENT? _____

COMPLETE A COPY OF QUESTION 2G-13 FOR **EACH** EAF WASTEWATER SOURCE. NUMBER EACH COPY OF QUESTION 2G-13 IN THE SPACE PROVIDED IN THE UPPER RIGHT CORNER. NOTE: QUESTION 2G-13 IS TWO PAGES LONG.

IF YOUR SITE HAS NO EAF SOURCES WHICH CONTRIBUTE PROCESS WASTEWATER NOT ASSOCIATED WITH AIR POLLUTION CONTROL, VACUUM DEGASSERS, CASTERS, OR STORM WATER, **CHECK THE BOX TO THE RIGHT AND SKIP TO QUESTION 2G-14.** **G**

2G-13. Provide information for this EAF shop and related on-site wastewater generating sources.

G CBI a. Indicate the source of process wastewater **NOT** associated with wet or semi-wet air pollution control, vacuum degassers, casters, or storm water. If there is more than one source at this shop, complete a copy of this question for **EACH** EAF source.

- **G** Raw material preparation and storage
- **G** Slag quenching
- **G** Equipment cleaning and washdown water
- **G** Other *(specify)*: _____

G CBI b. Provide a list of chemicals or pollutants known or believed to be present in this source of process wastewater. If a list is readily available, attach it to the survey with this question number and your site ID written on the upper right corner. If a chemical or pollutant originates from a commercial cleaning solution (e.g., solutions used to clean and wash equipment), provide the vendor name of the cleaning product and product code, if known.

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

G CBI c. Provide the wastewater flow rate and period of discharge associated with the source checked above.

_____ gpm _____ hours per day _____ days per year

OR: _____ gallons per day _____ days per year

COMPLETE A COPY OF QUESTION 2G-13 FOR EACH ELECTRIC ARC FURNACE STEELMAKING SOURCE GENERATING PROCESS WASTEWATER NOT ASSOCIATED WITH AIR POLLUTION CONTROL, VACUUM DEGASSERS, CASTERS, OR STORM WATER.

G CBI **2G-13.**d. **(cont.)** Indicate the destination of this wastewater stream. Check (✓) **ALL** that apply.

- **G** Discharge to treatment *(specify treatment system)*: _____
- **G** Discharge without treatment by pipeline, sewer, or other conveyance to surface water *(specify outfall number)*: _____
- **G** Discharge without treatment by pipeline, sewer, or other conveyance to POTW *(specify designation for permit monitoring location)*:
  _____
- **G** Discharge without treatment by pipeline, sewer, or other conveyance to PrOTW *(specify designation for permit monitoring location if applicable)*: _____
- **G** Zero discharge or alternative disposal methods:
  - **G** Deep-well injection
  - **G** Evaporation *(specify method)*: _____
  - **G** Percolation pond
  - **G** Spray irrigation
  - **G** Contract hauled
    (specify disposal rate, including transportation): $ _____ per gallon
    (specify destination/disposal method): _____
  - **G** Incineration
  - **G** Other *(specify)*: _____

G CBI **2G-14.** Provide information on any major process modifications and/or shut downs which have occurred at this EAF shop since 1993. Provide EAF shop and furnace designations in the description. Designation(s) should correspond with response(s) to Question 2G-2.

Shut Down or Modification?	Date	Description

G CBI **2G-15.** Provide information on any publicly announced process modifications and/or shut downs planned to occur during the next five years (1998 to 2002) at this EAF shop. Provide EAF shop and furnace designations in the description. Designation(s) should correspond with response(s) to Question 2G-2.

Shut Down or Modification?	Anticipated Date	Description

G CBI **2G-16.** Indicate **ALL** pollution prevention (waste reduction) or management practices implemented by your site for this EAF shop and describe the practice as it is implemented. Describe all processes where by-products and wastes are recovered for reuse or sold as a raw material feedstock. Discuss the percent recovered. Provide EAF shop and furnace designations in the description. Designation(s) should correspond with response(s) to Question 2G-2.

Management Practices	Description of Practice
G Management of spillage and losses from raw material handling operations associated with this EAF shop	
G Management of runoff from raw material storage piles associated with this EAF shop	
G Management of fugitive discharges of process wastewaters and materials to EAF shop noncontact cooling water (NCCW) systems	
G Surveillance and corrective action programs for oil discharges from large NCCW flows associated with this EAF shop	
G Collection and treatment and/or disposal of storm water from any areas associated with the EAFs (specify manufacturing processes or other collection areas in the description)	
G Control of runoff/leachate and ground water contamination from EAF slag processing adjacent to the furnaces	
G Control of runoff from EAF slag processing remote from the furnace	
G Collection and treatment and/or disposal of landfill leachate from any landfills associated with EAF shop wastes	
G Collection and treatment and/or disposal of contaminated ground waters associated with this EAF shop	
G Disposal of process wastewater from other sources by electrode cooling, peak shaving, or slag quenching (specify sources in the description)	
G Other *(specify)*:	

G CBI **2G-17.** Attach a process flow diagram (PFD) that shows the EAF steelmaking process and the water use associated with the process. You are **NOT** required to create a new PFD if an existing diagram will suffice. Number the diagram in the upper right corner, and include your site ID number (as shown on the cover page of Part A). Specific instructions for including the PFD, along with an example diagram, are provided below. **Flow rates are NOT required on the diagrams.**

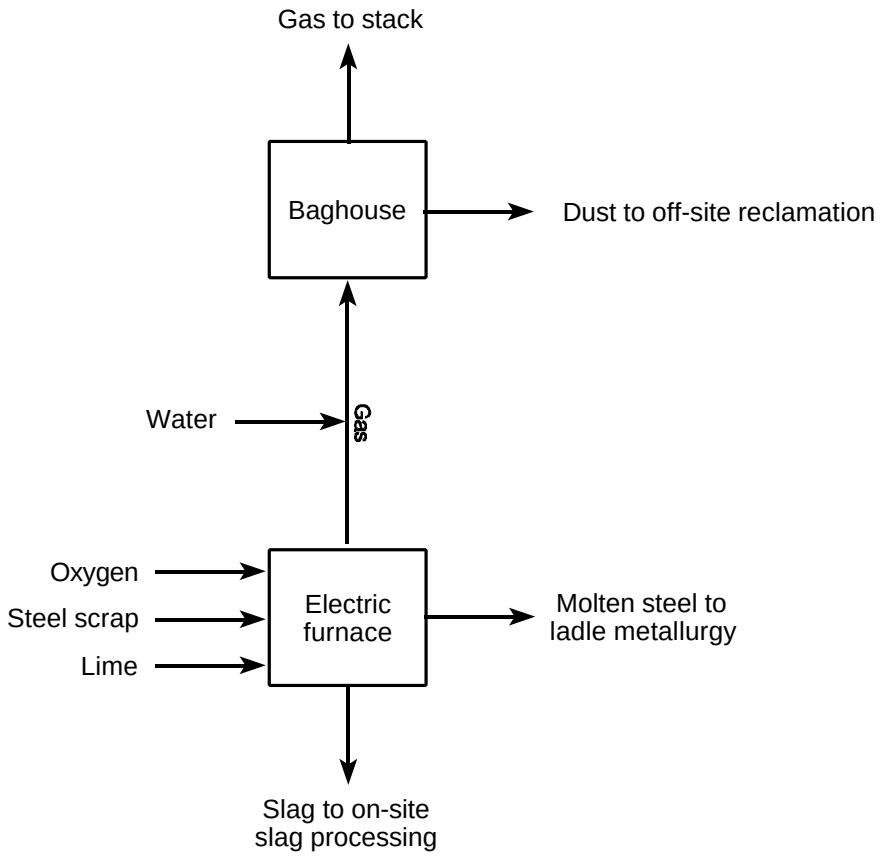
Provide the PFD number assigned to the EAF steelmaking PFD. **If the process is already shown on a PFD provided elsewhere in this survey, provide the PFD number and review the following list for completeness.** If you need assistance, call the Technical Information Help Line at (800) 357-7075.

EAF steelmaking PFD-_____

Process Flow Diagram Checklist

Be sure...	✓
All EAF steelmaking operations are included. Include those operations which do not generate process wastewater.	**G**
All air pollution control systems are included. Label each system as being either wet, semi-wet, or dry. Water streams for all wet or semi-wet air pollution control systems must be shown, including all recycle streams and all treatment processes within recycle loops.	**G**
Any recycle or reuse of process wastewater or other waters is indicated clearly on the diagram.	**G**
Any in-process wastewater treatment or reuse technologies are indicated. Show and label all treatment units and all recycle loops.	**G**
Significant losses of water (e.g., evaporation) are shown.	**G**
All materials entering each operation and all products and wastes exiting each operation are identified. Wastes include wastewater, sludges, baghouse dust, and point-source air emissions. Noncontact cooling water systems which do not contain process wastewater and do not discharge to process wastewater systems do not need to be included.	**G**
All process wastewater streams are identified. When sources and destinations of process wastewater are not shown on the diagram (i.e., the stream is entering from or exiting to a location not shown on the diagram), describe the source or destination (e.g., "from river" or "to wastewater treatment") and add the PFD number, when appropriate, where the stream's previous or next location can be seen.	**G**
The PFD number and your site ID number are written on the diagram.	**G**
If you believe that the diagram should be treated as confidential, stamp it "Confidential" or write "Confidential" or "CBI" across the top. If any diagram is not marked "Confidential", it will be considered nonconfidential under 40 CFR Part 2, Subpart B.	**G**

Site ID **XXXX**
PFD **10**



Electric Arc Furnace
Example Process Flow Diagram

COMMENTS FOR SECTION 2G: ELECTRIC ARC FURNACE STEELMAKING

Cross reference your comments by question number and indicate the confidential status of your comment by checking (✓) the box in the column titled "CBI" (Confidential Business Information). If you need additional space, photocopy this page before writing on it and number each copy in the space provided in the upper right corner.

Question Number	CBI	Comment
	G	
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	G	
	G	
	G	

SECTION 2H. VACUUM DEGASSING

TECHNICAL INFORMATION HELP LINE: (800) 357-7075

IS VACUUM DEGASSING PERFORMED AT THIS SITE?

G YES (CONTINUE)

G NO (SKIP TO SECTION 2I)

THROUGHOUT THIS SECTION, YOU WILL BE REQUIRED TO PROVIDE INFORMATION FOR **ALL** OPERABLE UNITS AND WATER SYSTEMS RELATED TO VACUUM DEGASSING WHICH WERE ON SITE DURING 1997, INCLUDING UNITS AND WATER SYSTEMS WHICH MAY HAVE BEEN IDLE FOR AN EXTENDED PERIOD OF TIME DUE TO CIRCUMSTANCES SUCH AS MARKET CONDITIONS, MAJOR REBUILDS, OR LABOR DISPUTES. IF AN OPERABLE UNIT OR WATER SYSTEM WAS NOT IN OPERATION DURING 1997, SUBSTITUTE THE MOST RECENT CALENDAR YEAR WHEN SUCH CIRCUMSTANCES DID NOT EXIST. NOTE THE YEAR OF OPERATION AND THE CIRCUMSTANCES IN THE COMMENTS AT THE END OF THIS SECTION, AND PROVIDE DATA FROM THAT CALENDAR YEAR.

STOP

HOW MANY **OPERABLE VACUUM DEGASSING PROCESSES** WERE ON SITE DURING **1997**? IF MULTIPLE VACUUM DEGASSING STATIONS SHARE A COMMON VACUUM SYSTEM, OR IF THERE ARE MULTIPLE SMALL DEGASSING STATIONS IN ONE SHOP (E.G., A SET OF VACUUM ARC REMELT (VAR) STATIONS), THESE STATIONS MAY BE COUNTED AS ONE PROCESS. _____

COMPLETE A COPY OF QUESTION 2H-1 FOR **EACH** OPERABLE VACUUM DEGASSING PROCESS. NUMBER EACH COPY OF QUESTION 2H-1 IN THE UPPER RIGHT CORNER. NOTE: QUESTION 2H-1 IS TWO PAGES LONG.

G CBI **2H-1.**a. Indicate which type of vacuum degassing operation is performed at this process.

- **G** Stream degassing *(specify type)*:
  - **G** Ladle-to-mold degassing
  - **G** Ladle-to-ladle degassing
  - **G** Tap degassing
  - **G** Other *(specify)*: _____
- **G** Recirculation degassing *(specify type)*:
  - **G** Dortmund-Horder-Huttenunion process (D-H)
  - **G** Ruhrstahl-Heraeus process (R-H)
  - **G** RH-OB process
  - **G** Other *(specify)*: _____
- **G** Vacuum ladle degassing *(specify type)*:
  - **G** Induction stirring
  - **G** Vacuum-oxygen decarburization (VOD)
  - **G** Other *(specify)*: _____
- **G** Vacuum degassing with supplemental reheating *(specify)*:
  - **G** Ladle refining furnace (refining with arc reheating)
  - **G** Vacuum arc remelt (VAR)
  - **G** Modified vacuum induction (Therm-I-Vac)
  - **G** Other *(specify)*: _____
- **G** Other *(specify)*: _____

G CBI b. Provide the designation by which your site refers to this vacuum degassing process.

_____

COMPLETE A COPY OF QUESTION 2H-1 FOR EACH OPERABLE VACUUM DEGASSING PROCESS.

G CBI **2H-1.**c. **(cont.)** Provide the designation of the BOF/EAF shop which is associated with this vacuum degassing process. The designation should correspond with a response provided in Question 2F-2 (BOF) or 2G-2 (EAF).

_____

G CBI d. What year was vacuum degassing first performed at this process? _____

G CBI e. What is the total rated capacity of this vacuum degassing process in tons of steel degassed per year?

_____ tons/year (to three significant figures, e.g., 565,000 tons/year)

G CBI f. What is the annual number of heats used to determine the total rated capacity?

_____ heats/year

G CBI g. Indicate (✓) **ALL** function(s) of this vacuum degassing process.

- **G** Alloy additions
- **G** Temperature control
- **G** Deoxidation (O_2)
- **G** Hydrogen removal (H_2)
- **G** Decarburization
- **G** Desulfurization
- **G** Microcleanliness
- **G** Inclusion morphology
- **G** Other *(specify)*: _____

G CBI h. Provide annual production data for this vacuum degassing process for each of the five calendar years 1993 through 1997.

Year	Steel Refined (tons/year)
1993	
1994	
1995	
1996	
1997	

G CBI **2H-2.** Check (✓) **ALL** alloying elements which were charged to any vacuum degassing process in **1997**. If you have a previously prepared list of raw materials and alloying elements, attach it to the survey, write your site ID (shown on the cover page of Part A) and this question number on the upper right corner of the list, check (✓) the box to the right, and SKIP to Question 2H-3. **G**

G Aluminum	**G** Other *(specify)*: _____
G Boron	**G** Other *(specify)*: _____
G Chromium	**G** Other *(specify)*: _____
G Cobalt	**G** Other *(specify)*: _____
G Copper	**G** Other *(specify)*: _____
G Lead	**G** Other *(specify)*: _____
G Magnesium	**G** Other *(specify)*: _____
G Manganese	**G** Other *(specify)*: _____
G Molybdenum	**G** Other *(specify)*: _____
G Nickel	**G** Other *(specify)*: _____
G Niobium (Columbium)	**G** Other *(specify)*: _____
G Selenium	**G** Other *(specify)*: _____
G Silicon	**G** Other *(specify)*: _____
G Sulfur	**G** Other *(specify)*: _____
G Tantalum	**G** Other *(specify)*: _____
G Titanium	**G** Other *(specify)*: _____
G Tungsten	**G** Other *(specify)*: _____
G Vanadium	**G** Other *(specify)*: _____
G Zirconium	**G** Other *(specify)*: _____

HOW MANY **OPERABLE WET AIR POLLUTION CONTROL (WAPC) SYSTEMS OR OPERABLE VACUUM SYSTEMS (WHICH CAN BE MADE UP OF A SET OF BAROMETRIC CONDENSERS OR STEAM EJECTORS)** WERE ON SITE AT A VACUUM DEGASSING PROCESS DURING **1997**? A WAPC OR VACUUM SYSTEM MAY INCLUDE MULTIPLE DEVICES SERVING THE SAME PROCESSING UNIT. _____

COMPLETE A COPY OF QUESTION 2H-3 FOR **EACH** OPERABLE WAPC SYSTEM OR **EACH** OPERABLE VACUUM SYSTEM. NUMBER EACH COPY OF QUESTION 2H-3 IN THE SPACE PROVIDED IN THE UPPER RIGHT CORNER. NOTE: QUESTION 2H-3 IS THREE PAGES LONG.

IF YOUR SITE DOES NOT HAVE WET AIR POLLUTION CONTROL OR WET VACUUM SYSTEMS ASSOCIATED WITH ANY VACUUM DEGASSING PROCESSES, **CHECK THE BOX TO THE RIGHT AND SKIP TO QUESTION 2H-4.** **G**

G CBI **2H-3.**a. Provide the designation(s) of the vacuum degassing process(es) and all other operations associated with this WAPC system or vacuum system. Process designation(s) should correspond with response(s) to Question 2H-1.b. If information for this WAPC system is already provided elsewhere in this survey, answer Question 2H-3.a., check the box to the right, and SKIP to Question 2H-4. **G**

_____

G CBI b. Indicate the devices in this system. Check (✓) **ALL** that apply.

- **G** WAPC device (indicate the device(s), then continue):
  - **G** Venturi scrubber
  - **G** Spray chamber
  - **G** Evaporation chamber
  - **G** Separator
  - **G** Demister
  - **G** Packed tower
  - **G** Other *(specify)*: _____
- **G** Vacuum system (indicate the device(s), then SKIP to Question 2H-3.d):
  - **G** Barometric condensers
  - **G** Steam ejectors
  - **G** Other *(specify)*: _____

G CBI c. This WAPC system controls emissions from which of the following processes? Check (✓) **ALL** that apply.

- **G** Raw material handling, preparation, and storage
- **G** Building evacuation
- **G** Other *(specify)*: _____

G CBI d. Provide the gas or air flow through the system in dry standard cubic feet per minute (dscfm).

_____ dscfm

G CBI e. Is the water recirculated or applied once-through?

- **G** Recirculated (continue)
- **G** Once-through (SKIP to Question 2H-3.l.)

G CBI f. Is any treatment and/or conditioning (e.g., chemical additions) performed in the recirculating loop?

- **G** Yes (continue)
- **G** No (SKIP to Question 2H-3.j.)

COMPLETE A COPY OF QUESTION 2H-3 FOR EACH OPERABLE WAPC SYSTEM OR EACH OPERABLE VACUUM SYSTEM.

G CBI **2H-3.**g. **(cont.)** Does the treatment in the recirculating loop also treat wastewater from other processes?

G No - Dedicated treatment

G Yes - Treatment shared with other processes

Specify the processes: _____

G CBI h. Check (✓) **ALL** treatment units and/or treatment processes which are included in the recirculating loop.

G Clarifiers
G Classifiers
G Cooling towers
G Earthen Lagoons
  G Lined *(specify liner type)*:
    G Clay
    G Synthetic
    G Other *(specify)*: _____
  G Unlined
G Oil skimmers
G Scale pits
G Sludge dewatering units (e.g., vacuum filter, pressure filtration, etc.)
G Water filters (e.g., sand, multimedia, etc.)
G Water softeners
G Other *(specify)*: _____
G Other *(specify)*: _____
G None

G CBI i. Indicate chemical additions to the water recirculation system. Check (✓) **ALL** that apply.

G Acid
G Caustic (sodium hydroxide)
G Corrosion inhibitor
G Lime
G Polymer
G Scale inhibitor
G Surfactant
G Other *(specify)*: _____
G Other *(specify)*: _____
G None

G CBI j. Provide the design flow of water through the recirculating loop. _____ gpm

G CBI k. Provide the average recirculation rate of water through the system.

_____ gpm _____ hours per day _____ days per year

G CBI l. Provide the average rate at which new water is added to the system (for once-through systems, provide the influent flow rate; for recirculating systems, provide the makeup flow rate).

_____ gallons per day _____ days per year

COMPLETE A COPY OF QUESTION 2H-3 FOR EACH OPERABLE WAPC SYSTEM OR EACH OPERABLE VACUUM SYSTEM.

G CBI **2H-3.**m. **(cont.)** Indicate **ALL** sources for water addition. Provide the percentage of water contributed by each source. The percentages should add to 100 percent.

- **G** Plant service water (city, well, or surface water which has not been used elsewhere on site) _____ %
- **G** Noncontact cooling water *(specify manufacturing process(es))*: _____ _____ %
- **G** Treated process wastewater *(specify manufacturing process(es))*: _____ _____ %
- **G** Untreated process wastewater *(specify manufacturing process(es))*: _____ _____ %
- **G** Treated storm water *(specify manufacturing process(es) or other collection area(s))*: _____ _____ %
- **G** Untreated storm water *(specify manufacturing process(es) or other collection area(s))*: _____ _____ %
- **G** Other *(specify)*: _____ _____ %

Total 100 %

G CBI n. Provide the average discharge rate from the system (for recirculating systems, provide the blowdown rate).

_____ gpm _____ hours per day _____ days per year

OR: _____ gallons per day _____ days per year

G CBI o. Indicate the destination of wastewater discharge or blowdown. Check (✓) **ALL** that apply.

- **G** Discharge to treatment *(specify treatment system)*: _____
- **G** Discharge without treatment by pipeline, sewer, or other conveyance to surface water *(specify outfall number)*: _____
- **G** Discharge without treatment by pipeline, sewer, or other conveyance to POTW *(specify designation for permit monitoring location)*: _____
- **G** Discharge without treatment by pipeline, sewer, or other conveyance to PrOTW *(specify designation for permit monitoring location if applicable)*: _____
- **G** Zero discharge or alternative disposal methods:
  - **G** Deep-well injection
  - **G** Evaporation *(specify method)*: _____
  - **G** Percolation pond
  - **G** Spray irrigation
  - **G** Contract hauled
    (specify disposal rate, including transportation): $ _____ per gallon
    (specify destination/disposal method): _____
  - **G** Incineration
  - **G** Other *(specify)*: _____

G CBI **2H-4.**a. Are any dry air pollution control (DAPC) systems associated with any vacuum degassing processes on site?

G Yes (continue)

G No (SKIP to Question 2H-5)

G CBI b. Indicate the process(es) associated with DAPC systems and the vacuum degassing process designation associated with each process (designation(s) should correspond with response(s) to Question 2H-1.b.). Check (✓) **ALL** that apply. For each process checked, indicate the type of DAPC system.

Process	Vacuum Degassing Process Designation	Type of DAPC System
G Raw material handling, preparation, and storage associated with vacuum degassing		**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:
G Vacuum degassing emissions		**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:
G Building evacuation associated with vacuum degassing		**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:
G Other *(specify)*:		**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:
G Other *(specify)*:		**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:
G Other *(specify)*:		**G** Fabric filter (i.e., baghouse) **G** Electrostatic precipitator **G** Other *(specify)*:

STOP

EXCLUDING WAPC SYSTEMS, VACUUM SYSTEMS, AND STORM WATER, HOW MANY OTHER WASTEWATER SOURCES FROM VACUUM DEGASSING OPERATIONS ARE PRESENT? _____

COMPLETE A COPY OF QUESTION 2H-5 FOR **EACH** VACUUM DEGASSING PROCESS WASTEWATER SOURCE. NUMBER EACH COPY OF QUESTION 2H-5 IN THE SPACE PROVIDED IN THE UPPER RIGHT CORNER. NOTE: QUESTION 2H-5 IS TWO PAGES LONG.

IF YOUR SITE HAS NO VACUUM DEGASSING SOURCES WHICH CONTRIBUTE PROCESS WASTEWATER NOT ASSOCIATED WITH A WAPC SYSTEM, A VACUUM SYSTEM, OR STORM WATER, **CHECK THE BOX TO THE RIGHT AND SKIP TO QUESTION 2H-6.** **G**

2H-5. Provide information for the vacuum degassing process and related on-site wastewater generating sources.

G CBI a. Indicate the source of process wastewater **NOT** associated with wet air pollution controls, a vacuum system, or storm water. If there is more than one source at this site, complete a copy of this question for **EACH** vacuum degassing source.

- **G** Raw material handling, preparation, and storage
- **G** Slag quenching
- **G** Equipment cleaning and washdown water
- **G** Other *(specify)*: _____

G CBI b. Provide a list of chemicals or pollutants known or believed to be present in this source of process wastewater. If a list is readily available, attach it to the survey with this question number and your site ID written on the upper right corner. If a chemical or pollutant originates from a commercial cleaning solution (e.g., solutions used to clean and wash equipment), provide the vendor name of the cleaning product and the product code, if known.

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

G CBI c. Indicate the wastewater flow rate associated with the source checked above.

_____ gpm _____ hours per day _____ days per year

OR: _____ gallons per day _____ days per year

COMPLETE A COPY OF QUESTION 2H-5 FOR EACH VACUUM DEGASSING SOURCE GENERATING PROCESS WASTEWATER NOT ASSOCIATED WITH A WAPC SYSTEM, A VACUUM SYSTEM, OR STORM WATER.

G CBI **2H-5.**d. **(cont.)** Indicate the destination of this wastewater stream. Check (✓) **ALL** that apply.

- **G** Discharge to treatment *(specify treatment system)*: _____
- **G** Discharge without treatment by pipeline, sewer, or other conveyance to surface water *(specify outfall number)*: _____
- **G** Discharge without treatment by pipeline, sewer, or other conveyance to POTW *(specify designation for permit monitoring location)*:
  _____
- **G** Discharge without treatment by pipeline, sewer, or other conveyance to PrOTW *(specify designation for permit monitoring location if applicable)*: _____
- **G** Zero discharge or alternative disposal methods:
  - **G** Deep-well injection
  - **G** Evaporation *(specify method)*: _____
  - **G** Percolation pond
  - **G** Spray irrigation
  - **G** Contract hauled
    (specify disposal rate, including transportation): $ _____ per gallon
    (specify destination/disposal method): _____
  - **G** Incineration
  - **G** Other *(specify)*: _____

G CBI **2H-6.** Provide information on any major process modifications and/or shut downs which have occurred at the vacuum degassing processes since 1993. Provide vacuum degassing process designations in the descriptions. Designation(s) should correspond with response(s) to Question 2H-1.b.

Shut Down or Modification?	Date	Description

G CBI **2H-7.** Provide information on any publicly announced process modifications and/or shut downs planned to occur during the next five years (1998 to 2002) at the vacuum degassing processes. Provide vacuum degassing process designations in the description. Designation(s) should correspond with response(s) to Question 2H-1.b.

Shut Down or Modification?	Anticipated Date	Description

G CBI **2H-8.** Indicate **ALL** pollution prevention (waste reduction) or management practices implemented by your site for the vacuum degassing stations and describe the practice as it is implemented. Describe all processes where by-products and wastes are recovered for reuse or sold as a raw material feedstock. Discuss the percent recovered. Provide vacuum degassing process designations in the description. Designation(s) should correspond with response(s) to Question 2H-1.b.

Management Practices	Description of Practice
G Management of spillage and losses from raw material handling operations associated with the vacuum degassing stations	
G Management of runoff from raw material or product storage piles associated with the vacuum degassing stations	
G Management of fugitive discharges of process wastewaters and materials to vacuum degassing noncontact cooling water (NCCW) systems	
G Surveillance and corrective action programs for oil discharges from large NCCW flows associated with the vacuum degassing stations	
G Collection and treatment and/or disposal of storm water from any areas associated with vacuum degassing (specify manufacturing processes or other collection areas in the description)	
G Collection and treatment and/or disposal of landfill leachate from any landfills associated with vacuum degassing wastes	
G Collection and treatment and/or disposal of contaminated ground water associated with vacuum degassing wastes	
G Other *(specify)*:	
G Other *(specify)*:	

G CBI **2H-9.** Attach a process flow diagram (PFD) that shows the vacuum degassing processes and the water use associated with the processes. You are **NOT** required to create a new PFD if an existing diagram will suffice. Number the diagram in the upper right corner, and include your site ID number (as shown on the cover page of Part A). Specific instructions for including the PFD, along with an example diagram, are provided below. **Flow rates are NOT required on the diagrams.**

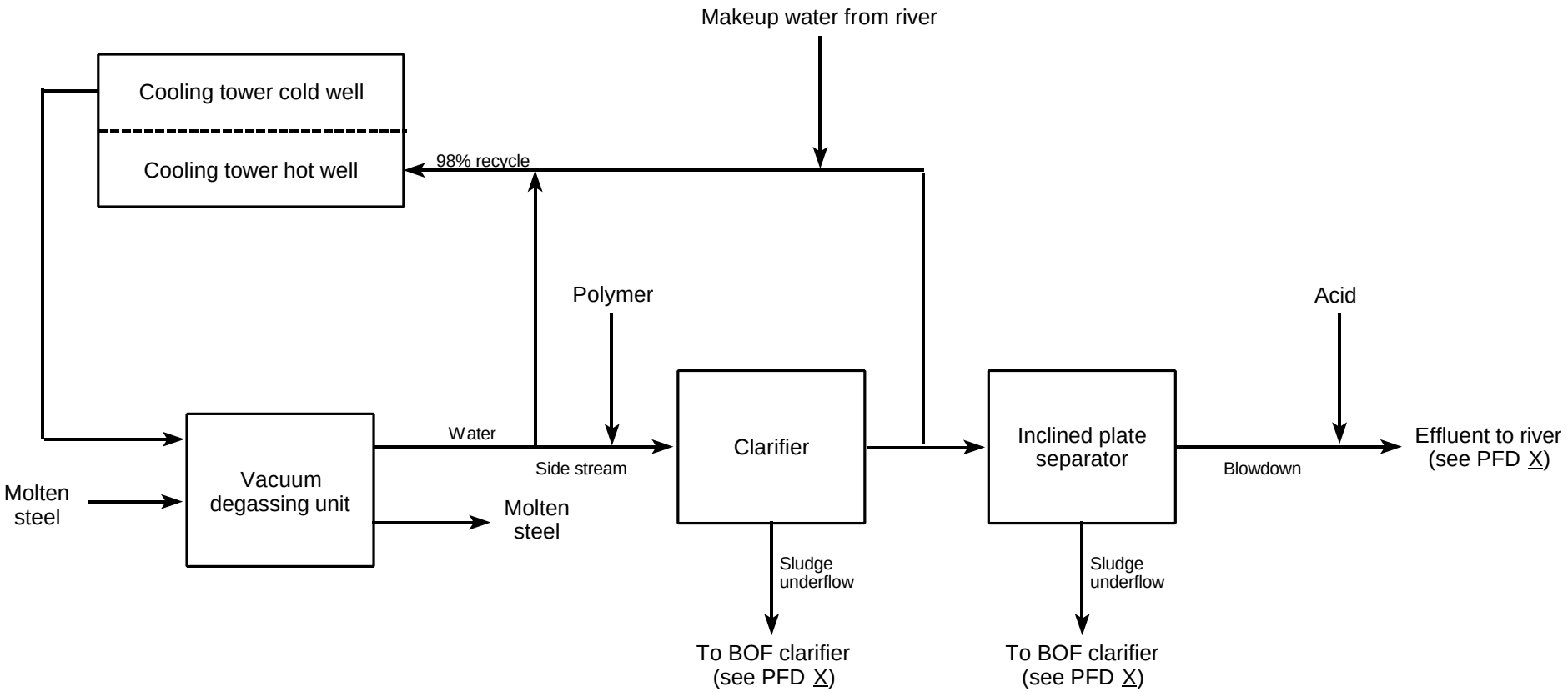
Provide the PFD number assigned to the vacuum degassing PFD. **If the process is already shown on a PFD provided elsewhere in this survey, provide the PFD number and review the following list for completeness.** If you need assistance, call the Technical Information Help Line at (800) 357-7075.

Vacuum degassing PFD-_____

Process Flow Diagram Checklist

Be sure...	✓
All vacuum degassing operations are included. Include those operations which do not generate process wastewater	**G**
All air pollution control systems are included. Label each system as being either wet or dry. Water streams for all wet air pollution control systems must be shown, including all recycle streams and all treatment processes within recycle loops.	**G**
Any recycle or reuse of process wastewater or other waters is indicated clearly on the diagram.	**G**
Any in-process wastewater treatment or reuse technologies are indicated. Show and label all treatment units and all recycle loops.	**G**
Significant losses of water (e.g., evaporation) are shown.	**G**
All materials entering each operation and all products and wastes exiting each operation are identified. Wastes include wastewater, sludges, baghouse dust, and point-source air emissions. Noncontact cooling water systems which do not contain process wastewater and do not discharge to process wastewater systems do not need to be included.	**G**
All process wastewater streams are identified. When sources and destinations of process wastewater are not shown on the diagram (i.e., the stream is entering from or exiting to a location not shown on the diagram), describe the source or destination (e.g., "from river" or "to wastewater treatment") and add the PFD number, when appropriate, where the stream's previous or next location can be seen.	**G**
The PFD number and your site ID number are written on the diagram.	**G**
If you believe that the diagram should be treated as confidential, stamp it "Confidential" or write "Confidential" or "CBI" across the top. If any diagram is not marked "Confidential", it will be considered nonconfidential under 40 CFR Part 2, Subpart B.	**G**

Site ID XXXX
PFD 11



2H-13

Vacuum Degassing
Example Process Flow Diagram

COMMENTS FOR SECTION 2H: VACUUM DEGASSING

Cross reference your comments by question number and indicate the confidential status of your comment by checking (✓) the box in the column titled "CBI" (Confidential Business Information). If you need additional space, photocopy this page before writing on it and number each copy in the space provided in the upper right corner.

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